A community study of minor psychiatric morbidity in Taiwan : A community study of minor mental disorders in Taiwan.

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A COMMUNITY STUDY OF MINOR ~~PSYCHIATRIC MORBIDITY~~ MENTAL DISORDERS IN TAIWAN

by

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ABSTRACT

A review of major epidemiological studies of minor psychiatric morbidity in Western societies has revealed that the relationships between such morbidity and sociocultural variables are still insufficiently investigated. Furthermore, there are very few well-conducted studies of this kind in non-Western societies.

However, a variety of socioenvironmental factors have been found to be significantly associated with minor psychiatric morbidity in community surveys carried out in Western societies. The purpose of this thesis is to investigate these associations in Taiwan. A large-scale survey was carried out on population samples randomly selected from rural, suburban, and urban communities, so as to reflect different degrees of urbanisation. The results are compared with findings from Western surveys, and the similarities/differences so revealed are considered in a crosscultural context.

The two-stage case finding strategy was applied with a newly developed and validated screening questionnaire and a modified clinical interview schedule. The level of psychiatric morbidity in the three samples was measured. The associations between such morbidity and demographic variables (including age, sex, marital, socioeconomic, and employment status), and psychosocial stresses experienced by the respondents within various life domains of the Chinese in Taiwan were investigated.

The results indicate that the significant association between higher minor psychiatric morbidity and females, lower socioeconomic status, unemployment, and marital dissolution found in most Western surveys was also evident in Taiwan. There was however no significant difference of prevalence either between surveys in Western societies

and the present study, or among the respondents of the three communities investigated. A significant association was found between the presence of psychosocial stressors and the risk of developing minor psychiatric morbidity.

Although the higher female prevalence was found to be significantly associated with the female social role stress similar to findings in Western surveys, the nature and significance of the stressors found in Taiwan are considerably different from those in Western societies. While poor marital relationship was significantly associated with the female preponderance of morbidity, the care of young children, housewife role frustration, and unemployment were not found to exert deleterious effect on the psychological well-being of women in Taiwan. Explanatory models based on sociocultural theories are proposed.

The basic symptoms of minor psychiatric morbidity found in Western surveys were also found in the present study. However, differences in the patterns and manifestation of such symptoms were evident and can be explained by the cultural characteristics in the life experiences of the Chinese in Taiwan. The notion of somatisation in Chinese neurotics advocated by some researchers was not supported in this study, and it is argued that both the psycholinguistic problem and the illness behavior of the Chinese cases might be better explanations for this misleading concept.

LIST OF CONTENTS

SUPPLEMENTARY PUBLICATIONS

1. Cheng, T.A. (1985). A pilot study of mental disorders in Taiwan. Psychological Medicine 15, 195-203.

2. Cheng, T.A. & Williams, P. (1986). The design and development of a screening questionnaire (CHQ) for use in community studies of mental disorders in Taiwan. Psychological Medicine 16, 415-422.

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"Behavioural science is characterised by context-dependent findings, not by pervasive laws".

"Mere manipulation of large datasets produces coefficients or quotes, but not meanings".

Albrecht, G. L. & Jackson, K. (1985)

CHAPTER I

INTRODUCTION

The main theme of this thesis is a community study of minor mental disorders in Taiwan. It was not until the past two decades that researchers in psychiatric epidemiology and allied sciences began to show increasing interest in this particular field. Problems of case definition and case identification partly account for much of this insufficiency.

Owing to the lack of objective criteria, the concept of being a case is necessarily affected by individual psychiatrist's limited clinical experience. Therefore, it is not surprising to find that the majority of early clinical as well as epidemiological studies were mainly concerned with the major psychotic disorders which the researchers often encountered in their daily clinical practice. The fact that patients hospitalized or visiting the outpatient clinic are a biased group with social selecting process has long been observed (Rosanoff, 1917; Mechanic, 1970; Bloom, 1975; Williams, 1979). This has not only limited the significance of results of hospital-based studies (e.g., Goldhammer & Marshall, 1953), but also means that case definitions used in community surveys of mental disorders are atypical and over-exclusive. In other words, such case definition relied mainly on clinically fairly severe psychotic symptoms (Wing et al. 1974) and obvious deviant behaviour which even ordinary people were often able to recognize. Hence, minor psychiatric morbidity was considerably neglected by such case definition.

Apart from the problem of atypical hospital-based case definition, difficulties in conducting large-scale community surveys forced most of the researchers to apply indirect methods of case-

identification to screen their populations being studied. These included the use of records from mental hospitals or various agencies, or the key informants in the community in early surveys (e.g., Roth & Luton, 1943; Stromgren, 1950; Lin, 1953; Eaton & Weil, 1955; Lin et al. 1969). Such a strategy, although possibly adequate for identifying psychotic cases, has been shown to miss a substantial proportion of the minor mental disorders in the community. For instance, when Eaton & Weil (1955) tried to compare the results derived from either direct interview or brief interview, or from assessing the report of doctors and local members, the different prevalence rates for neurotic disorders varied from 13.8/1000 to 2.7/1000, depending on the intensity of the case finding methods applied. These problems of case definition and case identification might well explain the fact that community study of minor psychiatric morbidity was relatively neglected in the first half of this century.

ADVANCES IN PSYCHIATRIC EPIDEMIOLOGY AFTER 1950

The high prevalence of minor mental disorders found in military recruits and in medical services during the Wars facilitated clinical and community studies of such morbidity (Milbank Memorial Fund, 1950; Shepherd & Cooper, 1964; Weissman & Klerman, 1978). The concept of caseness was extended and more sophisticated research strategies were gradually developed under the joint cooperation of psychiatrists, public health workers, and social scientists. Such collaborative research tactics has been progressing in the past thirty years with promising results (Cooper, 1973; Mechanic, 1973; Leung, 1978).

a) Standardised psychiatric interview

The first advance is the realisation of the unreliability of case definition and diagnosis between psychiatrists (Schmidt & Fonda, 1956;

Norris, 1959; Kreitman, 1961; Foulds, 1955; Kendell, 1975). The disparity of morbidity rates among community surveys before 1970 was found not to reflect an actual difference, but rather reflecting different case definition of different schools. Such fact was excellently demonstrated by some cross-diagnosis exercises between different researchers from different schools on separate samples of the community with their own criteria of caseness (e.g., Hagnell, 1966). Even within the same research team, each investigator's own style of interview and his emphasis on certain characteristics of symptomatology would affect the interviewee's response and the information thus gained, especially when the situation was a field survey where only one time-limited interview was generally applied.

In view of such discrepancies, investigators thus began to introduce standard methods, structured or semi-structured interview, and various methods of improving reliability of psychiatric diagnosis (Spitzer et al. 1964; Wing et al. 1967; Goldberg et al. 1970). Meanwhile, the advances in biological psychiatry after 1950's brought more and more evidence to support the notion that there is a qualitative difference between schizophrenia and affective disorder, between subtypes of affective disorder, and between psychosis, neurosis, and personality disorder. These changed the previous continuum model mainly held in some schools of the United States, where some previous researchers often considered all cases together (e.g., Srole et al. 1962; Leighton et al. 1963).

A number of diagnosis and classification systems were then introduced. Some of them (for instance, the 8th and 9th Version of the ICD (W.H.O., 1967; 1978) and the DSM-II (American Psychiatric Association)) were found to be inadequate for use in both clinical and community surveys because of their ambiguous, psychodynamically

oriented causal explanations in definitions. Others, like Feighner's criteria (1972), the Research Diagnostic Criteria (Spitzer et al. 1978), and the PSE-ID-CATEGO (Wing et al. 1978), were composed of diagnostic operational definitions appropriate for research purposes. However, the threshold of caseness in these systems is based mainly on patients, rather than on cases commonly seen in the community (Dohrenwend et al. 1978; Williams et al. 1980).

b) Research strategy and measurement of variables

Another aspect of the progress observed in the past thirty years concerns the evolution of research strategy and measurement of variables. As more and more studies revealed the chronic, fluctuating nature of many psychotic and neurotic disorders, the unreliability of retrospective information, which mainly relied on the memory of cases and their relatives, as well as the incompleteness of hospital records, was realized. Thus, causal explanations of most cross-sectional retrospective studies with inadequate measurement of psychiatric morbidity and sociocultural variables were repeatedly criticized (Cooper & Morgan, 1973).

The inadequate use of morbidity indices, such as the misuse of prevalence for incidence (e.g., Lin, 1953) was refined. The chronicity of many mental disorders has rendered questionable the causal explanation of cross-sectional surveys using prevalence rate as their morbidity index, since such a strategy is unable to clarify the temporal relationship of dependent and independent variables. An outstanding example is the long-lasting debate between the "breeder" hypothesis and "drift" hypothesis for social class and schizophrenia. It is very likely that the higher prevalence of schizophrenia in lower social class come from an accumulation of chronic cases because of

their deteriorating social functioning. Hence, the adequate morbidity index for testing these hypotheses is the incidence, not the prevalence. In other words, such higher prevalence can indicate no more than a positive association between schizophrenia and lower social class. Although some researchers have paid much attention to this fundamental issue (e.g., MacMahon & Pugh, 1970; Cooper & Morgan, 1973; Susser, 1973), the misuse of prevalence in causal investigation of mental disorders is still widely observed hitherto.

The fact that life experiences, personality make-up, and socio-cultural factors play quite complicated roles in shaping the inherited genetic constitutions of most adult mental diseases raised two additional formidable problems for the psychiatric epidemiologist. One is how to design and conduct prospective controlled studies on representative population samples with adequate size. The other is how to investigate the interaction of significant variables after having successfully controlled unwanted variables. Despite the progress of past two decades, most of these methodological problems are still commonly seen nowadays.

c) The search for causes - from functional psychosis to minor psychiatric morbidity

The international diagnostic comparability of psychoses has been relatively improved (Kendell, 1971; Sartorius, 1976), and significant progress has been made in the study of the roles of biopsychosocial factors regarding the aetiology and course of psychotic disorders since 1950's. These can be summarized as follows:

(1) Prevalence rates of psychotic disorders across nations or races are largely the same (Jablensky & Sartorius, 1975).

(2) Genetic predisposition to psychotic disorders have

consistently been demonstrated (Tsuang, 1975; Reveley & Murray, 1980), and, current findings favored the polygenic theory. Adoption studies (Heston, 1966; Rosenthal et al. 1971; Kety, 1983) favored an interaction between gene and environment (Kohn, 1976).

(3) No sociocultural factors and psychosocial stresses have ever been definitely proved to "cause" functional psychotic disorders (Murphy, 1961; Copper & Morgan, 1973; Kohn, 1976). On the other hand, they were found to influence the manifestations of psychopathology and the onset, course, treatment, and prognosis of these disorders (Brown et al. 1972; W.H.O., 1973; Vaughn & Leff, 1976; Cooper & Sartorius, 1977; Sartorius et al. 1978).

In spite of the considerable progress in the aetiological study of functional psychoses, the same cannot be said for minor psychiatric morbidity. The relationships between various biopsychosocial factors and minor psychiatric morbidity are still insufficiently investigated. Genetic family and twin studies have found significant genetic predisposition only in anxiety states (Slater & Shields, 1969; Torgersen, 1983; 1985). The genetic component of personality and neurosis is said to favor a polygenic inheritance interacting with the environment, and the heritability has tended to be lower than that of the functional psychoses (Murray & Reveley, 1981). Such heredity can not by itself produce minor psychiatric morbidity unless the person concerned is subjected to environmental stress (Miner, 1973). These genetic studies have suffered from two methodological problems. First, the majority of them used hospital patients, a highly selected and biased sample as previously criticised. Secondly, the population prevalence rates for all or particular types of neuroses varied considerably due to differential case definition and case finding methods (Carey et al. 1980). Moreover, no adoption study on minor

mental disorders has been well documented to evaluate the relative importance of both genetic and environmental factors.

In the past two decades, aetiological studies of minor psychiatric morbidity from sociocultural aspects have been increasingly reported in the literature of psychiatry and related sciences. They have been trying to test hypotheses concerning the associations between such morbidity and various socioenvironmental factors (such as urban-rural environment, ethnic groups, and social support), demographic variables (such as sex, marital status, socio-economic status, and employment status) and psychosocial stress. The present study intends to investigate these associations in a cross-sectional survey in three Chinese communities. It also intends to compare the results with findings from Western surveys in a cross-cultural context while testing a number of hypotheses.

The following sections of this chapter will first review literature regarding the conceptual and methodological evolution, as well as the results of community studies on minor psychiatric morbidity. Then, a statement of the aims and hypotheses of the present study will be given.

THE EVOLUTION OF CASE-DEFINITION IN MINOR PSYCHIATRIC MORBIDITY

In post-War psychiatric epidemiological studies, case definition was generally extended to include more neurotic disorders. The total prevalence rates were thus generally increased tenfold (e.g., Cole et al. 1957; Leighton et al. 1963; Hare & Shaw, 1965) as compared with previous surveys. However, such case-definition, as mentioned previously, was largely based on neurotic in-patients and out-patients with typical syndromes. Those who advocated such case definition emphasized that:

> "Symptoms should be used to build up specific classes which confirm to accepted clinical practice..." (Bebbington et al. 1980).

However, some researchers applied such case definitions in their community surveys and found that they were unreliable for their samples. In their comparative study of psychiatric symptoms in hospital and community samples, Dohrenwend & Crandell (1970) pointed out that:

> "... the same symptom in the community is likely to be evaluated very differently than its counterpart in the clinic or mental hospital...Psychiatric theory, nomenclature, and clinical experience provide vastly different standards for evaluating such symptomatology than those operative in the general population".

Williams and Tarnopolsky, in their review of this issue (1980), described the use in the community of case definitions derived from hospital psychiatry as analogues to the use of a case definition with diabetic retinopathy in a community prevalence study of diabetes. They commented that:

> "A common problem in present day community psychiatric research is the classification of individuals who cannot be clearly assigned to a diagnostic category, but who are not normal"

A number of researchers had encountered with this problem. They proposed terms like "subclinical neurosis" (Taylor & Chave, 1964), "stress reactions" (Bradburn, 1969), "dysthymia" (Foulds & Bedford, 1975), "nervous breakdown" (Wing, 1976a), or "demoralization" (Dohrenwend et al. 1980) to describe these "cases". From general practice survey experiences, Shepherd has already observed that most cases in the community are characterized by

> "such features as depression, anxiety, preoccupation with health, irritability and insomnia..."

He went on to note that:

> "...to include them with the neurotic depressive disorders of Section V ICD can serve to extend an outworn concept to breaking point" (Shepherd, 1977).

In fact, the preoccupation with hospital neurotic patients as case criteria is a clinical, instead of epidemiological, point of view. Under such preoccupation, two of the important uses of epidemiology, i.e., "delineation of new syndromes" and "completion of the clinical spectrum" (Morris, 1957), would not be well achieved. Any community study aiming at understanding the whole picture of minor psychiatric morbidity must gather information as widely as possible. Hence, any case definition bearing the likelihood of missing sensible information is inadequate for such purpose. Many of the community respondents only suffered from some kind of minor psychological discomfort which was either with symptoms too few to meet the criteria of traditional syndrome, or with symptom(s) of sub-threshold severity against clinical criteria. They are indispensable for epidemiological study, yet often escape the net. In order to catch them from the community for study, case definition based on psychiatric symptoms with a threshold lower than the clinical is probably required.

Early in 1960, a W.H.O. expert committee (W.H.O., 1960) recommended that symptoms are the most easily standardizable and measurable units of observation which can be independent of the influence of traditional diagnostic labeling, and can lead to the discovery of new syndromes or diseases. They even suggested one or more "Open categories" for new syndromes or diseases to be identified in the field study. Such suggestions might be more applicable to psychotic disorders as demonstrated by the use of the PSE in the IPSS project (W.H.O., 1973). As far as minor mental disorders are concerned, however, problems of orientation in selecting symptom variables and severity scales for the design of suitable interview schedule have become formidable.

Some researchers have tried to overcome these problems by

developing case definitions and interview schedules based on cases seen in the community. Among them, the Clinical Interview Schedule developed by Goldberg and his colleagues represented progress (Goldberg et al. 1970). With the abundant experiences from their general practice research, the authors paid much attention to the minor psychological complaints of the majority of cases found in the community in their selection of symptoms and their design of the schedule. The selected items were carefully worded so as to be acceptable to individuals who may not see themselves as mentally disturbed. It incorporated both the degree of stressfulness and social impairment caused by the symptoms in rating the severity of each symptom. There was no particularly developed diagnostic system and the investigator can apply any system on the symptom profile of each case. He can also use the symptom profile to carry out any epidemiological investigation. The Clinical Interview Schedule has been used in a number of community surveys (e.g., Cooper & Sylph, 1973; Tarnopolsky et al. 1980; Dilling & Weyerer, 1984; Ballinger et al. 1985; Jenkins, 1985).

THE EVOLUTION OF CASE FINDING METHOD IN MINOR PSYCHIATRIC MORBIDITY

a) The use of lay interviewers

Although the reliability of diagnosis between psychiatrists has been improved considerably with the introduction of standardized interviews and reliability studies, the large size of community samples forced researchers to look for screening methods to reduce the number of clinical interviews. One method is to use lay interviewers or medical students. Such people, after having received one or two weeks' training on the use of the relevant standardised interview schedule, have been used to collect clinical informations from the

community sample. Diagnoses have been made, either by the psychiatrist on the interview record (Cole et al. 1957; Srole et al. 1962; Leighton et al. 1963), or even directly by the lay interviewer's rating (e.g., Robins et al. 1984). This method has been criticized for either over-inclusiveness of symptoms by lay interviewers so as to yield too high morbidity rates (e.g., Leighton et al. 1963), or under-estimation of rates (e.g., Brunetti, 1976). Although some researchers carried out inter-rater reliability assessments between lay interviewer and psychiatrist (e.g., Robins et al. 1982) with favorable results, such an exercise can also be regarded as a validity test of the interview record of the lay interviewer. In a report of such a validity study on the Diagnostic Interview Schedule developed by Robins and her colleagues (1981), the authors pointed out that:

> "...current disorders and severe disorders are more accurately diagnosed than disorders in remission or borderline conditions. These findings are grounds for concern about using the DIS in general population surveys, where disorders too mild to warrant medical attention will occur."

They finally concluded that:

> "...recognizing that the DIS will inevitably be limited in its accuracy in making diagnoses in the general population..." (Robins et al. 1982)

Their conclusion supported many contemporary researchers' viewpoint that diagnosis or the judgment of caseness can only be made by experienced psychiatrists (e.g., Goldberg et al, 1970). Such a statement might especially be true when the disorder under consideration is minor psychiatric morbidity. Hence, a number of interview schedules recently designed to be used in the community by lay interviewers as diagnostic tools, have increasingly been criticised for their considerable disagreement on case identification and diagnosis with clinical cross-examination. For instance, Folstein and his colleagues conducted such a psychiatric examination on 810

community respondents previously received a diagnosis derived from the DIS. The agreement between the two diagnoses was rather unsatisfactory and the authors have to concluded that:

> "...the value of the DIS as an instrument that can be applied to large scale epidemiological studies will have to be based on relationships other than correspondence with psychiatrists' diagnosis." (Folstein et al. 1985)

b) The use of the general practitioner

Another alternative designed to save the psychiatrist's job was to use the general practitioner as the first line investigator. In Britain, because of the well developed primary medical care network, such studies had been frequently carried out (e.g., Kessel, 1960; Cooper, 1966). Huge differences of morbidity estimates between these surveys, ranging from 6% to 65%, were revealed (Shepherd et al. 1966). Apparently, this could only be explained by the very different diagnostic practice of them. Even with a general practitioner having received relative psychiatric training, the difference between him and a psychiatrist was still evident (Goldberg & Blackwell, 1970). The huge differences were mainly in the conspicuous morbidity. When two-stage screening techniques have been applied in general practice samples since 1970's, the variation is much less (e.g., Goldberg et al. 1976; Andrews et al. 1977; Henderson et al. 1979).

c) The use of screening instrument and two-stage strategy

Since the Wars, many questionnaires, inventories, or rating scales have been developed. Many of them were devised for assessing personality (e.g., the MMPI, the Maudsley Personality Inventory, the Eysenck Personality Inventory, Cattell's 16 PF questionnaire), or evaluating clinical conditions on known psychiatric patients (e.g., the Middlessex Hospital Questionnaire, the Hamilton Depression Scale,

the Brief Psychiatric Rating Scale). Some of them have been used as a diagnostic instrument in hospital settings (e.g., the Symptom-Sign Inventory). The advantages of using questionnaire as case finding instrument (being time saving and easy to conduct without the psychiatrist's participation) attracted many researchers. MacMillan thus conducted an area prevalence survey with the Health Opinion Survey (1957), and symptom rating scales or checklists have been used in many other community surveys till now.

The statistical treatment of these questionnaires or checklists was rather sophisticated, yet the adequacy of applying them in community survey was questioned because of various problems related to their form, content, response bias, validity and reliability (Bopp, 1955; Arthur, 1955; Blum, 1962; Foulds, 1965). These were summarized and criticized by Goldberg in his comprehensive review (1972). They included reliability of the informant, the defensive, overemphatic, or histrionic attitude of certain respondents, problems of overall agreement set, social desirability, "end-users" and "middle-users", positional bias, and scoring problems. Goldberg also pointed out that most questionnaires mixed up personality traits with symptoms, that some were asking about unreliable past history, and that most of them lacked adequate calibration and standardisation on community samples. They used hospital patients and sometimes included normal respondents from the community.

In his design and development of the General Health Questionnaire (G.H.Q.) (1972), Goldberg had overcome many of these shortcomings. He adapted the two-stage case finding strategy proposed by Blum (1962) and the method of measuring validity (expressed as specificity and sensitivity) described by Reid (1960) and Wilson & Jungner (1968). In the two-stage case finding strategy, a screening questionnaire is

first applied to a large sample of respondents, subsamples of whom, selected according to their questionnaire responses, are then interviewed in the second stage by a psychiatrist using one or other standardized method of assessment. The validity of the screening tool was then assessed against the psychiatric judgment. In the validity study of the G.H.Q., samples from both medical out patients and general practice population were used against independent clinical judgment using the Clinical Interview Schedule. The G.H.Q. thus developed has been further assessed both in general practice settings and community (e.g., Goldberg et al. 1976).

The design, development and assessment of the G.H.Q. marked a distinct advance in overcoming many problems seen in most of earlier screening instruments. In the past fifteen years, it has become the most well-known and most widely used screening instrument in both community and general practice surveys around the world. Its validity as a first-stage screening tool in community survey of minor mental disorders has generally been proved to be acceptable (e.g., Goldberg et al. 1976; Tennant, 1977; Duncan-Jones & Henderson, 1978; Tarnopolsky et al, 1979; Finlay-Jones & Murphy, 1979; Banks, 1983; Jenkins, 1985) with a few exceptions (e.g., Benjamin et al, 1982). Meanwhile, the two-stage case finding strategy has increasingly been applied in community surveys (e.g., Henderson et al. 1979; Bebbington et al. 1981; Jenkins, 1985). It is now a well established method in psychiatric epidemiological inquiry.

Although the introduction of the two-stage case finding strategy has overcome many practical and technical problems previously mentioned, new problems have been raised and discussed in the past few years. The first concerns the stability of the screening tool across different communities. Some research workers have suggested that the

same screening tool has to be recalibrated when applied in different clinical or community settings (Tarnopolsky et al. 1979). Furthermore, the use of a screening tool in a language and culture other than that in which it was designed and developed may give rise to considerable problems. These include problems related to the culture-specific occurrence or expression of symptoms as well as those due to language itself. They have become a major issue nowadays when more and more interview schedules, symptom rating scales or questionnaires, originally designed in English, have been introduced and applied in non-English speaking countries. Some workers find it possible to resolve the difficulties (e.g., Swartz et al, 1985), while others regard them as to be virtually insuperable and prefer to construct new culture-specific instruments (e.g., Carstairs, 1975; Verma & Wig, 1977). This problem still await to be solved in the future. The least requirement for any screening tool to be confidently applied at present, is to conduct a validity study in advance on a representative sample of the population to be studied.

The second problem concerns the method of statistical treatment in developing the screening tool and the conceptual difference regarding the interpretation of the screening result. Goldberg originally treated each item with equal weight and added up the scores of all items with positive response to give a total G.H.Q. score for each respondent. He also suggested that the G.H.Q. could be used both as an estimator of morbidity and as an indicator of severity (Goldberg, 1972). However, Tarnopolsky et al. (1979) revealed only moderate correlations between G.H.Q. scores and clinical ratings. Although the time-lag between their G.H.Q. administration and the clinical assessment might account for such a discrepancy (Duncan-Jones, 1979), empirical observation does often find that an

individual with severe clinical rating may have moderate G.H.Q. score whilst a case with mild clinical severity may exhibit very high G.H.Q. score.

A number of psychosocial factors could also affect the individual's response to the questionnaire, such as the sex difference in the expressiveness of psychological distress (Briscoe, 1978), the willingness and also ability of community respondents to report particular personal difficulties and so forth. In view of these problems, some researchers suggested that a probability model would be more adequate in interpreting the measures of screening tools (Williams & Tarnopolsky, 1980).

When Hand (1979) reanalysed Goldberg's (1972) G.H.Q. data, he found that the respondents could be better classified by the use of different statistical method. He suggested that the optimal method in the development of screening instrument would be to apply a discriminant function technique to find the best set of items with the highest classification power. In so doing, each item would no longer be given equal weight in the scoring.

The third problem relates to the misclassification of the screening tool. There are two types of misclassification: the false negative type (respondents being classified as "potential noncase" by the screening tool but judged by the clinical assessment to be a case) and the false positive type (respondents being classified as "potential case" by the screening tool but judged by the clinical assessment to be a noncase). A number of clinical and psychological factors have been found to affect these two types of misclassification differently. False negatives have been found to be related to severe and chronic psychiatric conditions (Goldberg, 1972; Finlay-Jones & Murphy, 1979; Munoz et al. 1978; Tarnopolsky et al. 1979; Benjamin et

al. 1982), as well as to defensive attitude (Goldberg, 1972). False positives have been found to be affected by multiple physical complaints (Goldberg et al. 1976; Tennant, 1977). Although Goldberg (1978) concluded that sex, race, age, social class and employment status had no clear effect on psychiatric screening classification, a more recent study has revealed that men were more likely than women to be classified as false negative, while poorly educated respondents were more likely to be classified as false positive (Mari & Williams, 1986).

In a two-stage survey, subsamples drawn from both groups of potential case and potential noncase were usually interviewed by a psychiatrist to confirm their clinical status. The overall prevalence rate can be computed by a weighting process of the clinical status of subsamples against the original groups (Diamond & Lilienfeld, 1962). However, chi-square test is inappropriate for such weighted values. If the purpose of the study is to test hypotheses concerning psychiatric morbidity and various socio-cultural factors, either the screening result of the original sample (the score of the questionnaire or potential case versus potential noncase) or the clinical status of the subsamples (i.e. case versus noncase) can be used as the dependent variable. The latter can be fitted into a case-control strategy (Schlesselman, 1982).

SOCIO-CULTURAL FACTORS AND MINOR PSYCHIATRIC MORBIDITY

Having reviewed the conceptual evolution of case definition, as well as the methodological evolution of case finding in community studies of minor psychiatric morbidity, it is clear that many problems remain. The following review and assessment of the related surveys will therefore carefully examine their case definition, case finding

method, and research strategy. Substantial findings in surveys except the Formosan will first be examined, and those in the latter will then be compared with the former.

a) Urbanisation

One of the most fundamental and vivid change of human society in the past one hundred years has been the rapid development of many large urban cities in most countries. The associated change of life style following urbanisation have attracted the attention of many thinkers, medical professionals, and social scientists. Many of them believed that urbanisation would complicate human life, that it would increase psychosocial instability and alienation, and that the simple, traditional rural life pattern is protective for mental health (Klerman, 1969; Greenblatt, 1970; Fromm, 1973; Murphy & Taumoepeau, 1980). In 1957, the World Federation of Mental Health sponsored a panel discussion on mental health aspects of urbanisation. A number of factors, such as noise, population density, and social stress, were viewed as important causes of mental disorders.

Some researchers, however, took a different view. Srole (1972), for instance, emphasized that there was a pervasive "anti-urban bias" which had influenced and distorted the concept of urban mental health and mental illness. He pointed out that such antagonism toward the city could be traced back to the Old Testament and its references to Sodom, Gomorrah, and the "whore city" of Babylon. It was echoed by people like Thomas Jefferson and Eric Fromm. The latter suggested that there was a causal association between the development of cities, sadism, the deliberate destruction of life, and an attraction for dead things, or necrophilia. The notion that urban life is detrimental to mental health, as contended by Srole and many others since, emerges

from this tradition. In order to evaluate the notion of a negative effect of urban life on mental health, it is necessary to review the results of relevant surveys hitherto. The ideal research strategy to investigate this issue would be the historical study which, theoretically speaking, could compare psychiatric morbidity rates before and after urbanisation has taken place in one particular community to give the most straight-forward answer. However, the formidable difficulties of such study are quite clear: the psychiatric case definition, the population under survey, and the research team are all unlikely to remain unchanged over time. The famous historical study by Goldhammer and Marshall (1953) previously mentioned thus found that the increase of first admission rates between 1840 and 1940 was mainly due to the increase of treatment facilities and the change of the social structure to foster families sending their elderly members with mental disorder for long-term care.

One alternative to historical study is the cross-sectional comparison of the amount of minor psychiatric morbidity between different areas with different degrees of urbanisation. Dohrenwend & Dohrenwend (1974) reviewed several community studies carried out in urban and rural settings and concluded that rates of neurosis and personality disorders are higher in urban than in rural areas. Kasl & Harburg (1975) criticized the validity of the epidemiological data and concluded that there was no evidence to support the view of pathogenity of urban setting. Comstock & Helsing (1976), using the CES-D as their depression index in a community survey in Washington County, found no urban-rural differences. Burvill (1982) compared existing data between developed and non-developed countries, as well as between rural and urban communities in developed countries (e.g., Krupinski, 1979). Again, there was no evidence showing that urban

population have higher rates of both major and minor mental disorders.

Leaving aside the significance of these comparison exercise, the comparability itself is a serious problem. Mueller (1981) pointed out that:

> "...such comparisons of separate studies are usually dubious value because conceptions of psychiatric disorder and methods of case identification vary widely".

Nevertheless, a few community surveys, using standardized interview by psychiatrist with identical case definition, were conducted both in urban and rural areas. The comparison between their morbidity rates is more likely to have better significance. The Ugandan survey (Orley & Wing, 1979) and Camberwell survey (Bebbington et al, 1981) are such examples. They both applied the Present State Examination (PSE) with its Index of Definition (Wing et al. 1978). The total prevalence rates are 25.3% and 10.9% respectively, indicating a higher rate in African rural villages. Another example is the comparison between surveys in Outer Hebrides (two islands) of Northern Scotland (rural area) and Camberwell of London (Brown & Harris, 1978; Brown & Prudo, 1981; Prudo et al. 1981). The one year prevalence rates of all minor psychiatric morbidity in women found in these two surveys are 13.5% and 16.6%, and that of depression are 11.0% and 14.8% respectively, showing a slightly higher rates in London urban area. However, the differences, unlike the authors' claim, are not significant statistically.(1)

There is therefore, a lack of scientific evidence at present to support the notion of urban adversity to mental health. Wing (1976b)

Note (1): A recalculation of the chi-square test on their data failed to find any significant difference as the authors claimed, either between three (two in Outer Hebrides, one Camberwell) or two communities (the two in Outer Hebrides were combined into one) on both rates of total minor psychiatric morbidity and depression case only.

has concluded that:

> "Lesser degrees of mental ill-health are very common, and often reactive to stress in the social environment, but it seems that such stresses may occur as frequently in rural life as in cities".

Brown & Prudo (1981) have further tried to explain the rural-urban difference of depression rates with their aetiological model of provoking agents and vulnerability factors. One of their conclusions was that:

> "...a simple urban/rural dichotomy does not give an accurate picture of the differing rates of depression within the two populations".

The comments of these workers are certainly relevant to the impact of socioenvironmental factors on minor psychiatric morbidity within a more culturally homogeneous society. However, a few questions arising from the rural-urban comparisons of minor psychiatric morbidity mentioned above might indicate the insufficiency of community surveys for such hypothesis testing:

(1) Nearly all the comparisons were performed either within developed countries, or between urban communities in developed country and rural communities in under-developed countries. It has been said that the entire culture and way of life in many developed countries have become urbanised and "largely independent of the city" (Levitt, 1972; Kristol, 1974). Furthermore, there are different kinds of urbanisation and rural life among all the countries with different degrees of development. Therefore, it might be argued that a more reasonable cross-sectional comparison is probably that within developing country where communities with different degrees of urbanisation, ranging from large urban cities to rural areas, can be found. There, well-designed community surveys with sophisticated, comparable case finding methods and case definition in urban, semi-

urban, and rural areas can be expected to produce more convincing evidence.

(2) As previously discussed in this chapter, the threshold of caseness in most standardized psychiatric interviews, such as the PSE, has been criticized as being based mainly on patients seen in special settings. If one takes a careful look on the PSE findings of the surveys in Outer Hebrides and Camberwell by Brown and his colleagues, the prevalence rates of borderline case of the two surveys are identical (being 19.4% and 19.0%). Hence, a more extended case definition of minor psychiatric morbidity is probably more adequate for use in community surveys aiming at rural-urban comparison of such morbidity.

(3) Since most of the surveys use prevalence rate as their morbidity index, it is difficult to derive causal explanation for any urban-rural difference revealed. It is possible that, as with psychosis, socioenvironmental differences might mainly affect the course, and not the occurrence of minor psychiatric morbidity. Unless longitudinal studies of incidence rates are carried out in the course of urbanisation in rural communities of underdeveloped countries, no definite conclusion could be, and should be made.

If these three problems can be dealt with, perhaps the following comment by Burvill (1982) would be better supported:

> "...every society, of whatever era, produces its own peculiar range of stresses...those stresses are no more frequent in modern industrialized society but merely different in type".

b) Culture and ethnicity

(1) Morbidity rates

The association between urbanisation and minor psychiatric morbidity might be influenced by different cultures and ethnic groups.

For instance, it is difficult to tell whether the higher prevalence of depression found in the Ugandan survey is mainly related to the rural-urban environmental difference, or to cultural and ethnic differences. Today, many ethnic groups living in separate countries are facing the impact of urbanisation and Westernisation upon their traditional cultures (such as the Asian and African peoples). It has become more difficult to assess the effect of each of these variables on minor psychiatric morbidity. However, it is still possible to investigate such morbidity among non-Westerners both in their under-developed native countries and in Western urban communities where they have emigrated to for generations. Comparison can then be made between the rates of these two groups and those of Westerners. Another strategy is to compare the rates found both in urban and rural areas of developing countries with those of the Western countries.

Carstairs (1975) had reported an overall prevalence rate of 32% in males and 40% in females with disturbing psychiatric symptoms in his South Indian survey. He applied a two-stage case finding method with standardized instruments, and both psychiatrist and non-medical interviewers were engaged in the field work after a series of pretests and reliability studies. Leon (1972) reviewed most of the community surveys in Latin America and found that prevalence rates of mental disorders are comparable to those in other parts of the world (the figures in urban areas were around 17 to 18 per cent).

Recently, a number of community surveys in the States have tried to compare the prevalence of depression between ethnic groups. The differences between Black and White communities in the prevalence of depression have been found to be non-significant when sociodemographic variables were controlled for (e.g., Eaton & Kessler, 1981; Frerichs et al. 1981; Roberts et al. 1981). Dressler & Badger (1985) have

compared rates of depressive symptoms in three epidemiological surveys carried out in Black communities in the States. They found no significant difference as well. Furthermore, the figures are essentially similar to those found in other studies in the States, and to that in the Ugandan Survey (Orley & Wing, 1979). However, the methods of case finding in these surveys are different widely. Most of the American surveys used different kinds of screening tools such as the CES-D (Center for Epidemiological Studies, Depression scale) or the Hopkins Symptom Checklist depression subscale, whereas the Ugandan survey applied standardized interview (the PSE) exercised by a psychiatrist.

In view of the shortcomings of screening tools, it is difficult to draw any definite conclusion. For example, when the validity of the CES-D was assessed by a standardised psychiatric interview, the Schedule for Affective Disorders and Schizophrenia, there was only a modest relationship between them (sensitivity 59.5%, specificity 70.8%, and classification rate 70.0%) (Roberts & Vernon, 1983). Nonetheless, these relatively similar prevalence figures might probably have two implications. First, the effect of urbanisation does not increase the rate of minor psychiatric morbidity. Secondly, there is probably no difference on rates of such morbidity between different races or cultures. In order to reach more confirmative evidence for these implications, community surveys with more sophisticated case finding method (such as the standardized psychiatric interview and the two-stage case finding method), as well as more consistent, cross-culturally comparable case definition of minor psychiatric disorders are still needed.

(2) Symptom Manifestations

The issue of cross-cultural comparability in symptomatology, case definition and diagnostic nosology of psychiatric disorders has long been debated. This is mainly because of the divergent viewpoints held by different researchers. Lin (1982) has stressed the influence of specific culture on the identification and case definition of major psychosis. German (1972) emphasized the effect of poor nutrition, physical disease, and illiteracy on the characteristic phenomena of many psychotics in Africa (such as the acute transient onset, the vivid catatonic and conversion symptoms, and the relatively poor delusional manifestations) which were also reported in other under-developed areas (e.g., Dube, 1970). He argued that sociocultural influences are mainly of pathoplastic nature and being likely to become less as development progresses in non-Western cultures. Wittkower & Termansen (1969) have pointed out the similarity in thought, feeling, and behavior between educated Westerners and educated Asians, as well as the common characteristics of uneducated people all over the world. King (1978) reviewed studies from 40 countries and concluded that psychopathology is universal and manifestations of signs and symptoms differ from culture to culture.

Most of the patients studied, as mentioned by Wittkower & Termansen (1969), came from mental hospitals and constitute therefore a highly selected sample. Strauss (1979) argued that such limited experience can only be improved by standardized clinical assessment in cross-cultural settings on key diagnostic criteria. The International Pilot Study of Schizophrenia (W.H.O., 1973) has fulfilled such requirements and demonstrated that schizophrenia can be identified in all nine centres. The same findings for affective psychoses have also been reported (Leff et al. 1976).

Cross-cultural comparison of the symptom manifestation of minor

psychiatric morbidity has been relatively little studied. Surveys carried out in Africa (German, 1972; Binitie, 1975), India (Hoch, 1961; Neki, 1973), Philippines (Maguigad, 1964), Taiwan (Tseng, 1975; Kleinman, 1977), and Peru (Mezzich & Raab, 1980) have found that somatic symptoms and hypochondriasis are the predominant symptoms of depression, whereas guilt, worthlessness, and suicide thoughts are less common than their Western counterparts. Some investigators stress the high frequency of somatisation (somatic symptoms, conversion reaction) in neuroses among certain ethnic groups (Dube, 1970; Lin, 1982). Tan (1969) compared neurotic patients of different ethnicity in West Malaysia. He found that anxiety neurosis was more common among the Chinese than other ethnic groups, and physical symptoms was the most predominant symptom group among Chinese and Indian patients.

Nonetheless, methodological problems in earlier studies of minor psychiatric morbidity might affect their findings. First, many of them have only studied patients which, being a biased group, can not tell us the complete picture of symptom patterns and distributions of cases in the community. Secondly, the entire symptom spectrum of minor psychiatric morbidity needs to be standardised and operationalised in order to facilitate cross-cultural and cross-ethnic comparative study in the community. In so doing, the pathoplastic difference on symptom manifestations across cultures, as well as the culture-specific psycholinguistic problems have to be taken into consideration in the development of case finding instruments.

(3) Psycholinguistic problems

In their field survey, Rin et al. (1966) applied a translated, modified English-origin questionnaire. They revealed that:

> "...many persons were unable to understand the Western form or symptom description and translation was essential, particularly with emotional symptoms and attitude questions".

The translation was performed by the investigators into local terminology which was said to be effected smoothly. However, whether the translated local terminology has the exact equivalent meaning of the original English questions might still remain questionable. One plausible resolution would be to exercise a two-stage translation which was used in the IPSS project (W.H.O., 1973). In this method, the translated questionnaire or schedule was translated back by a local person who was familiar with English. The back-translated version was then examined by an English-speaking person to ensure that the original meaning has not been distorted.

The two-stage translation method has improved the cross-cultural comparability of psychiatric study to a considerable extent. At least, the investigators from different cultural settings learn better about what they intend to compare. However, the difference in psycholinguistic expression of emotional states between different cultures still can not be solved properly. In an attempt to investigate the cross-cultural differences in the emotional differentiation between anxiety, depression, and irritability, Leff (1973) compared the correlation of PSE scores between any two of the three emotions of patients from nine centres involved in the IPSS. He concluded that developed countries show a greater differentiation of the emotions than developing countries.

However, some aspects of this study require comments. First, the patients in the IPSS were all schizophrenics whose emotional expression might be deficient. It would be more sensible to use community cases with minor psychiatric disorders for this study. Secondly, the method of the study was to investigate the presence/

absence of two different emotions among anxiety, depression, and irritability in any patient. If any two different emotions were always reported to be coexistent to the same extent by a patient, or were always reported to be absent together, then the differentiation between them was taken to be "poor". The mutual exclusiveness of any two emotions reported by a patient was taken to be extremely good differentiation between them. Such a strategy is in fact based on the case definition and diagnostic criteria of the PSE, i.e., fairly severe symptoms and hierarchical diagnostic concept. The adequacy of them for use in community study has been criticized recently. A number of other investigators, notably the CIS workers, have in fact found that many community cases of minor psychiatric disorders in Western societies exhibit a mixture of emotional symptoms (Shepherd, 1977; Brown, 1981). Thus, the assumption by Leff on good/poor differentiation of emotions might reflect no more than patterns of distribution of emotional symptoms.

Thirdly, the standardised interview of the PSE was constructed according to the English expression of emotions and translated into other languages (two-stage). Since each culture has its own way and language in expressing emotions, it is nonsense to judge one culture against another culture on emotional differentiation. For instance, Cox (1977) pointed out that although Ugandan women with depression commonly presented with sleep disturbance or physical symptoms, anxiety or depression could also be described by the patient in the Luganda vernacular language. Similarly, the Chinese language, having been well developed over thousands of years, has a very rich vocabulary for various emotional expressions. One would wonder how many Chinese linguists would agree on the notion that Chinese people have the lowest degree of emotional

differentiation as proposed by Leff.

It is therefore argued that the essential issue on cross-cultural comparison of emotional symptoms, supposedly shared by all human races, is to find out the cultural equivalents in language and behavior of them. In order to achieve this, extensive field experiences from cases of different social and subcultural background, as well as of different severity and patterns of emotional symptoms within a culture might well be required since most research psychiatrists lack these experiences. This requirement might be especially relevant for researchers in developing countries since many of them received professional training in Western countries. Although they are familiar with the description of symptoms among Western psychiatrists, they have still been unable to develop research instruments relevant to their own cultures. It is also suggested that linguists would appropriately be involved in the development of interview schedule or questionnaire and the translation of instruments between languages.

c) Demographic variables

While a number of community surveys have failed to confirm any significant association between macroscopic sociocultural environment (such as urbanisation, culture, and ethnicity) and minor psychiatric morbidity, nearly all of them have found significant associations between such morbidity and certain demographic variables within each society. These have included sex, marital status, social class, and employment status. Some of these associations are found to be modified by different societies, others are more consistent across societies. Although some of them have been claimed to play an independent effect, interactions between them are also revealed.

Therefore, the headings of the following discussion are only for convenience. They do not necessarily imply that the factors have independent effects.

(1) Sex difference

The female preponderance among psychiatric patients and general practice attenders with neurotic disorders has long been observed (Gove & Tudor, 1973). However, differences in social selection factors and the willingness to consult (Hinkle et al. 1960; Dohrenwend & Dohrenwend, 1976; Mechanic, 1978) between the two sexes mean that treatment statistics do not reflect the true difference of prevalence in the general population. Recent community surveys carried out in Western societies have generally revealed a higher prevalence of minor psychiatric morbidity among females (e.g., Binder et al. 1981; Bebbington et al. 1981; Henderson et al. 1981; Hirschfeld & Cross, 1982; Dilling & Weyerer, 1984; Madianos et al. 1985). This higher prevalence of females has been found at every age group (Weissman & Klerman, 1977). Some researchers argued that such difference was due to "response bias" (Sudman & Bradburn, 1974; Mechanic, 1978) which could be more likely to occur when the case finding instrument used was only a screening questionnaire. Nonetheless, others found no evidence to support this (e.g., Clancy & Gove, 1974; Gove & Geerken, 1977). In a recent review, Gove (1984) has concluded that women do in fact have higher rates of mental morbidity, and, that the higher rate of female psychiatric patients is caused by such higher morbidity.

What has made this controversy more complicated is that a number of community surveys carried out in non-Western societies, using standardised psychiatric interview on representative samples with acceptable response rates, have not found a female preponderance on

minor psychiatric morbidity (e.g., Carstairs, 1975; Orley & Wing, 1979). Some community surveys in the States also reported that the female preponderance, though consistently evident in Anglo populations, has not consistently been found in Afro-American communities. Some of the latter (Comstock & Helsing, 1976; Ilfeld, 1978; Roberts et al. 1981) have, conversely, revealed a slightly higher rate in males.

Dressler & Badger (1985) have compared the distribution of depressive symptoms in black communities in Alabama, Kansas City, and Alameda County in the States. They found that the relationships between depression and sex, marital status, and income were different among three communities. While rates of depression were significantly higher among females in Alabama, such sex difference was absent in the other two communities. Differential sociocultural processes operating in these communities were proposed to explain this interaction between community/region and risk factors. A greater independence and role flexibility observed among the black women in Kansas City and Alameda County were suggested to be able to reduce female role stresses and thus reduce the sex difference in depression.

A number of hypotheses have been proposed to explain the sex difference found in some "Western" surveys. Various biological investigations, including genetic studies (Gershon & Bunney, 1976; Torgersen, 1983), hormonal studies (Weissman & Klerman, 1979; Kendell et al. 1981), studies of premenstrual tension (Clare, 1983) and the menopause (Hallstrom, 1973; Greene & Cooke, 1980) all failed to account for the higher rates in women. In one recent study with a sample from homogeneous population, Jenkins (1985) did not find any sex difference in the prevalence or outcome of minor psychiatric

morbidity. The author concluded that:

> "...where sex differences are commonly found, they are unlikely to be caused by constitutional differences, but rather by differences in the social environment and social roles of men and women."

In view of these controversial findings on sex difference across different sociocultural backgrounds and ethnic groups, the basis for a biological theory is even further weakened. Thus, the controversial findings of sex difference in such morbidity might be explained by different social environment and social roles of both sexes between different societies.

Although a number of sex role hypotheses concerning minor psychiatric morbidity have been proposed and tested in the past two decades in Western societies, such efforts have largely neglected the Western minority groups and non-Western societies, as well as cross-cultural comparison between them. In his South Indian survey, for instance, Carstairs (1975) found that women in patrilineal families have significantly higher rate of psychiatric symptoms than their matrilineal counterparts and such differences were not found in males. The author did not compare case rates between two sexes for both patrilineal and matrilineal families. Nonetheless, his finding strongly suggested cultural influence on differential morbidity rate of two sexes and social roles.

Nearly all the surveys concerning causal explanations of sex difference in minor psychiatric morbidity have used prevalence rates, instead of incidence, as the morbidity index. A higher prevalence in women might only imply more cases with longer duration than men, a result probably due to socioenvironmental influence. To put it in another way, men and women might have similar incidence but different prevalence of minor psychiatric morbidity. Without evidence from

longitudinal study, any causal explanation of female preponderance can not be justified. For example, when Williams (1986) reanalysed the morbidity figures found in the Lundby prospective cohort surveys (Hagnell et al. 1982) between 1947-57 and 1957-72, he found that the sex difference in rates of depression in the community appears to be decreasing over time. However, the secular change in sex ratio (female/male) of lifetime expectancy rates of depression varied with different levels of severity. For the medium and mild cases, this ratio has considerably decreased, but it has conversely increased mildly for the severe (largely psychotic) cases over the time. This finding has clearly indicated the sociocultural influence on the extent of less severe minor psychiatric morbidity.

Most of the hypotheses concerning sex difference in minor psychiatric morbidity have been based upon the effect of social roles occupied by men and women in Western societies. The influence of early upbringing and social environment to cause a learned stereotypic belief of the females with lower ability and low self-esteem has been stressed by some researchers (e.g., Seligman, 1975; Cochrane & Stopes-Roe, 1980; Williams & Best, 1982). Such beliefs (role-identity) and the consequent poor role-performance with psychological frustration were then said to cause a higher vulnerability to neurosis. However further evidence is needed to confirm this association. Other hypotheses have emphasised the effect of different adult sex roles. Most of them have been derived from empirical data concerning the relationship between psychiatric morbidity and sex, marital status, employment status, social class, and psychosocial stress. These will be discussed in the following sections.

(2) Marital status

With few exceptions (e.g., Fox, 1980; Bebbington et al. 1981), Most community surveys have shown that widowed, divorced, and separated people have higher rates of minor mental disorders than currently and never married people for both sexes (e.g., Srole et al. 1962; Blumenthal, 1967; Stein & Susser, 1969; Briscoe et al. 1974; Pearlin & Johnson, 1977; Henderson et al. 1979; Kessler, 1979; Gove et al. 1983; Surtees et al. 1983; Dilling & Weyerer, 1984; Madianos et al. 1985; Markides & Farrell, 1985). Many researchers favored a social causation explanation for this difference and emphasised both the stress of marital disruption and the supportive function of marital life. Others argued for a social selection hypothesis which suggests that people with minor mental disorders are selectively less able to get or to stay married (Martin, 1976; Rushing, 1979). Such a debate is yet another example of being unable to clarify the time order of variables concerned in cross-sectional surveys.

The difference of rates between the single and the married is inconsistent in the literature. Some studies have found lower rates among the married than the single in men (e.g., Bebbington et al. 1981), and higher rates among the married than the single in women (e.g., Surtees et al. 1983). Conversely, the studies of Finlay-Jones & Burvill (1977) and Henderson et al. (1979) failed to find significant difference between the single and the married of either sex.

The relationship between sex, marital status and minor psychiatric morbidity has attracted many researchers' interest in searching for causal explanation of the female preponderance. Gove (1972) reviewed related literature and concluded that married women have higher rates than married men, but non-married women (including

the single, the divorced, the separated, and the widowed) do not have the same trend. A number of surveys even found an inverse relation, i.e., non-married men have higher rates than non-married women (Gove, 1978). He argued that biological factors are not responsible for the female preponderance since such preponderance is not consistently found amongst different marital strata. The hypothesis proposed by him was that the role of married women is much more frustrating than that of their male counterparts. Being married is a less stressful and more satisfying experience for men than for women in Western societies.

However, Gove's review was criticised to be largely restricted to hospital studies by Fox (1980). Although some subsequent community studies supported his social role theory (e.g., Bebbington et al. 1981), others did not reveal an interaction between sex and marital status on minor psychiatric morbidity despite their same finding of female preponderance (e.g., Warheit et al. 1976; Cochrane & Stopes-Roe, 1980, 1981; Fox, 1980; Markides & Farrell, 1985). Markides & Farrell (1985) found that women and marital disruption were independently associated with disorder. These findings obviously failed to support Gove's hypothesis. Even if married women do have higher rate than married men, any social role explanation still can not rule out the possibility of a female genetic vulnerability. It is reasonable to hypothesise that there is an interaction between such vulnerability and the higher stress of marital life in women, or even other sex-related socio-cultural differences which contributes to a higher rate of morbidity.

Other surveys found that some psychosocial factors have complicated the relationship between marital status and psychiatric morbidity. These included different social expectations, poor marital

relationship, social isolation, poverty, unemployment, and the care of young children (Meile et al. 1976; Pearlin & Johnson, 1977; Brown & Harris, 1978; Cochrane & Stopes-Roe, 1980; Tennant et al. 1982; Gove et al. 1983). These findings suggested that marital status, being a simple structural variable, has different psychosocial impact to the individual. In fact, there is a large proportion in any marital category of men or women who do not suffer from minor psychiatric morbidity. Gove and his colleagues later changed their emphasis from marriage per se to the quality of a marriage (1983). Thus, a more relevant comparison would probably be that between different subgroups of say, married women, with clearly defined and well controlled variables. Otherwise, we are very likely only to be repeating what the earlier community surveys did in search of the sociocultural "causes" of major psychotic disorders.

Another issue worthy of exploration is the relation between marital status and minor psychiatric morbidity in non-Western societies where the role stresses for various marital categories are likely to be more or less different from that in Western societies. Such exploration would be more interesting in those societies where a negative finding of female preponderance on minor psychiatric morbidity have been reported.

(3) Employment status

The negative effect of unemployment on psychological well-being has been well demonstrated from both cross-sectional (e.g., Hepworth, 1980; Stafford et al. 1980; Warr, 1982) and prospective studies (e.g., Kasl et al. 1975; Gore, 1978; Banks & Jackson, 1982; Warr & Jackson, 1985) in Western societies. However, as Warr & Jackson has pointed out (1985), there are two different kinds of deleterious effect of

unemployment on mental health, i.e., the immediate impact (as an acute life event stress) and the prolonged impact (as a chronic psychosocial stress/adversity). The influences of several sociodemographic, economic, and job-related variables on these two aspects have not been well investigated hitherto.

Warr (1982) has listed out a number of these independent variables, including age, sex, occupational status, financial position, duration of unemployment, work involvement, work condition, family unemployment, social support, local levels of unemployment, hobbies and personal interests. Among these, main effect has been found to come from prolonged unemployment (Jackson & Warr, 1984; Warr et al. 1984), employment commitment (Jackson et al. 1983; Ullah et al. 1985), and a low social support (Ullah et al. 1985) in cross-sectional surveys. The effect of prolonged unemployment on psychological ill-health was found to be mediated by middle age stratum, desire for a job, and financial stress, but not by the young age (under 20) and old age (above 60) strata. The effects of employment commitment and social support were found to interact with each other, and were also influenced by sex and ethnic differences (Ullah et al. 1985).

The mediating effects of age has been explained from a psychosocial point of view. Warr (1982) suggested that the stress of unemployment might be strongest for middle age married men since they are responsible for the financial needs of their family. On the other hand, unemployment for people in their 50s might be better adjusted as "early retirement". It might also be less stressful for the young unmarried because they do not have a family burden (Hepworth, 1980). Although the stress of unemployment is also evident among the latter group (e.g., Finlay-Jones & Eckhardt, 1981; Banks & Jackson, 1982), different mediating factors would have to be investigated. The stress

of retirement is a separate issue also needed to be inquired.

A few longitudinal studies have tried to confirm the aetiological significance of these variables. Gore (1978) revealed a mediating effect of social support on physical and mental ill-health during unemployment, and a significantly higher level of social support among the rural than the urban unemployed. Warr & Jackson (1985) have found that higher employment commitment, middle age group, and the lack of financial support were significantly contributed to a decline of mental health during continuous unemployment, and such decline has remained the same after 3 months of unemployment. The regaining of a job has been found to improve significantly the psychological health among those having received emotional support during unemployment (Bank & Jackson, 1982; Warr & Jackson, 1985), provided that the financial gain has been adequate, and the duration of unemployment has not been too long (Banks & Jackson, 1982).

Although the negative effect of unemployment on psychological well-being has generally been found in men, the results in women have been controversial. Some studies revealed better mental health in employed women than housewives (Mostow & Newberry, 1975; Brown & Harris, 1978; Nathanson, 1980; Tennant et al. 1982) and attributed it to the protective effect of this extra social role with increased social contact and social support. Some aspects of social support was found to be significantly lower in women than men with unemployment (Ullah et al. 1985). Others could not find any difference between employed women and housewives in their mental health (Radloff, 1975; Newberry et al. 1979).

Some researchers, such as Nathanson (1980), emphasized the importance of social meanings and attitudes on employment status for both sexes with different marital status. Being unemployed brings a

great deal of psychosocial pressure for a married man in most patriarchic societies, whereas the normative social expectation for a married woman is the family nurturant role. An outside job for her may, as argued by Miller et al. (1979), create role conflict and overload when she also has to perform the traditional family role. Krause & Markides (1985) found that the protective effect of job only evident among the divorced and separated Mexican American women, and that such effect was positively intensified by the traditional sex-role orientation, whereas negatively influenced by the presence of young child at home. In their Camberwell study, Tennant et al. found that personal preference or choice has a mediating effect on the relation of employment status to disorder in married women. Those who can choose to work or to do housekeeping and care young children have better mental health than those who have no choice. The highest rate of disorder has been found in those who were forced to stay at home. The authors attributed the female preponderance of neurosis to such role conflict and poor marital relationship.

The interactive effect of sex and employment on psychiatric morbidity has generally been found to be absent (e.g., Cochrane & Stopes-Roe, 1980, 1981; Banks & Jackson, 1982; Gore & Mangione, 1983; Surtees et al, 1983). However, such effect might be different in non-Western communities where socio-cultural impact on different sex and employment status, as well as on age, marital status, and socioeconomic status, are relatively different from Western communities. The relative importance of the interactive effects of all these variables with employment upon mental health there warrant inquiry.

(4) Age

Findings on the association between age and minor psychiatric morbidity has been the most inconclusive among all demographic variables. Some revealed higher rates among younger age groups of both sexes (Shepherd & Gruenberg, 1957; Benfari et al. 1972; Uhlenhuth et al. 1974; Hirschfeld & Cross, 1982), or females only (Weissman & Klerman, 1979). Some have opposite findings, with the younger yielding the lower rates among both sexes (Srole et al. 1962; Comstock & Helsing, 1976; Dilling & Weyerer, 1984; Madianos et al. 1985), or among males only (Leighton et al. 1963; Weissman & Klerman, 1979). A number of others did not find a clear association between age and morbidity rates among both sexes (Hare & shaw, 1965; Warheit et al. 1973; Orley & Wing, 1979; Bebbington et al. 1981), or among males (Martin et al. 1957) or females (Leighton et al. 1963; Brown & Harris, 1978). Thus, no clear pattern has been established.

The association between age and minor psychiatric morbidity should be interpreted in relation to other factors. The increase of rates with age in both sexes found by Comstock & Helsing (1976) changed to the opposite direction when adjusted for socioeconomic factors (a confounder). A few recent surveys have found some specific interactive effect between age and other demographic or psychosocial factors on minor psychiatric morbidity. One example has been the greater psychological ill-health among the middle-aged married men exposed to prolonged unemployment as previously mentioned (Jackson & Warr, 1984). In general, however, there seems no universal high risk age group for such morbidity and more specific risk factors will probably have to be sought within each age group in different societies.

(5) Socioeconomic status

The relationship between socioeconomic status (S.E.S.) and mental disorders has long been an issue in psychiatric community studies. Although many recent cross-sectional surveys have revealed a significant association between a low S.E.S. and minor psychiatric morbidity (e.g., Comstock & Helsing, 1976; Brown & Harris, 1978; Cochrane & Stopes-Roe, 1980; Weissman & Myers, 1980; Bebbington et al. 1981; Surtees et al. 1983; Dilling & Weyerer, 1984; Madianos et al. 1985), contradictory findings have also been found. Some reported no such association in women (Brown & Prudo, 1981; Costello, 1982). Others even found a higher rate in the upper strata (e.g., Nandi et al. 1979). The differences in the measurement of S.E.S. and case definition might account for much of this discrepancy. The former has been defined either on occupational prestige, or education, or income, or even unemployment. Such variation has obscured the implication of this gross variable and undermined the comparability between surveys. Being a simple structural social variable, the significant association between lower S.E.S. and higher prevalence of functional psychoses and minor psychiatric morbidity found in many surveys is difficult to be interpreted as a causal relationship. The people of lower S.E.S. are likely to experience more psychosocial stress and less social support which might lead to a higher psychiatric morbidity ("breeder" or "social causation" hypotheses). Alternatively, people with psychiatric illness are more likely to have impairment of social and occupational functioning which might cause a downward mobility in S.E.S. ("drift" or "social selection" hypotheses). These two effects might in fact combined with each other on the same individual. There is still another possibility that the lower S.E.S. and the psychiatric morbidity are both attributed to a vulnerable personality.

In the history of psychiatric epidemiology before 1970, there has

been a long debate concerning various hypotheses on the relationship between S.E.S. and schizophrenia (e.g., Gerard & Huston, 1953; Hare, 1956; Hollingshead & Redlich, 1958; Goldberg & Morrison, 1963; Roman & Trice, 1967). In one review of this issue, S.E.S. has been described to be as only a concomitant factor for psychotic disorders (Cooper & Morgan, 1973). As far as minor psychiatric morbidity is concerned, the evidence has so far favored the social causation hypothesis (Dohrenwend & Dohrenwend, 1969; Kessler & Cleary, 1980).

Current community surveys tend to view low S.E.S. as an indirect mediating socioenvironmental factor which might contribute to a higher risk of developing minor psychiatric morbidity when the subject concerned has encountered chronic adversity or life event stress and less social support. Meile et al (1976) have found that the higher rate of morbidity in married than non-married women was mainly among the low S.E.S. group (educational level was used here) with or without introducing controls over the effect of age and employment status. They have attributed it to a more stressful marital role among the low S.E.S. group related to childcare, and family income. Brown & Harris (1978) argued that working class women had a higher risk of developing depression because they experienced more vulnerability factors.

However, the vulnerability model they proposed has not been replicated partly or entirely in subsequent surveys. Being conducted in the same community - Camberwell, Bebbington et al. (1981) failed to replicate the model on any of the vulnerability factors. On the contrary, they revealed that working class women with children were particularly prone to develop minor psychiatric morbidity in response to adversity. Tennant (1985) further argued that the findings of Brown & Harris were dependent on a specific statistical model, i.e., the <u>additive</u> model. In this model, the interactive effect of two or

more risk factors was examined via a comparison between the sum of individual effects and the joint effect of them (when presented at the same time). Whereas in multiplicative models, the interactive effect is indicated by how much the baseline risk is multiplied in the presence of one or more factors. The recent development of statistical methods in dealing with multidimensional contingency tables has favored the multiplicative model (Fienberg, 1977).

Among women in Calgary, Canada, Costello (1982) only found both the lack of marital intimacy and adversity to be significantly associated with higher morbidity. He concluded that the role of social structural factors is community-specific. Different societies and cultures obviously have different structures of S.E.S. and the psychosocial stress of their S.E.S. would presumably be different. Therefore, it is lacking sound grounds to generalise a particular S.E.S./morbidity relationship over every different community and cultures.

Summary (demographic factors)

To sum up, many investigations about the relationship of demographic variables with minor psychiatric morbidity, as some workers (e.g., Jenkins, 1985) pointed out, have only regarded the former as simple structural variables without considering the individual difference in his or her own experience with the social roles derived from these variables, as well as the significance of these roles to the individual. The former mainly concerns the "role performance" of the individual associated with his (her) own personality trait, stresses encountered, coping style, social supports, and role satisfaction. The latter mainly related to subjective perception, namely, how (s)he identifies herself or himself

with a particular role. Meanwhile, the two are likely to interact with each other and could substantially influence the individual's psychological health. Furthermore, the over-generalisation of some epidemiologists and social scientists on their findings and hypotheses as constant and invariant "laws of nature" has been criticised (e.g., Pawson, 1978; Albrecht & Jackson, 1985). Thus, it might be more relevant to investigate the independent and joint effects of these variables on the individual's mental health in his or her own particular sociocultural environment.

d) Psychosocial stress and minor psychiatric morbidity

The association between psychosocial stress and mental disorders has long been familiar to clinical psychiatrists and epidemiologists. Earlier studies have generally concentrated on two kinds of psychosocial stresses. The first kind concerns stress of acute environmental changes simultaneously encountered by populations or large groups, such as natural disasters (e.g., Rawnsley & Loudon, 1964; Bennet, 1970; Kingston & Rosser, 1974), combat conditions (Swank, 1949), and migration (Odegarrd, 1932; Murphy, 1961). The second kind is related to acute specific life events encountered by individuals, such as childbirth (Pugh et al. 1963; Paffenbarger, 1964) and surgical intervention (Knox, 1961; Barker, 1968).

These earlier surveys have been extensively reviewed (e.g., Cooper & Shepherd, 1970; Dohrenwend & Dohrenwend, 1974). Although they have generally confirmed a positive link between antecedent life stresses and the onset of mental illness, problems concerning the definition and measurement of stressful life events, as well as the research design have been commented. The latter included the relative neglect of taking individual vulnerability and adaptability into

consideration, the need to investigate mediating factors on the impact of life events, and the shortcoming of the cross-sectional research design. For those hospital studies, stress has been found to be attributable to illness behavior (Mechanic, 1974). Furthermore, very few earlier studies have particularly concerned the minor psychiatric morbidity.

In the past two decades, minor psychiatric morbidity has become one central issue in the study of stress and mental health. The pioneering work of Holmes and Rahe (1967) has started the investigation about the effect of ordinary life events on mental disorders with specifically designed measuring instruments, which has been succeeded by several others (Paykel et al. 1971; Tennant & Andrews, 1976; Brown & Harris, 1978). Most of the studies have applied either quantitative or qualitative analysis on life events which can be clearly recalled by the subjects about the dating of onset. The majority of studies have suggested a causal association between the dependent variable (mental illness) and life events. The most obvious evidence has come from specific events (such as loss) and depressive illness (Paykel et al. 1969; Finlay-Jones & Brown, 1981).

However, a few surveys have not found such an association (e.g., Gersten et al. 1977; Horowitz et al. 1977). Furthermore, the causal relation has been questioned from both conceptual and methodological points of view (Brown, 1974; Dohrenwend & Dohrenwend, 1978; Tennant et al. 1981; Susser, 1981). These include the validity of measures, the reliability of life events reporting, the time order between onset of illness and onset of life event, the retrospective falsification of life event stress, the question of distress response and illness, the methods in assessing the nature and magnitude of stress, the interaction of other socioenvironmental variables and so forth.

Although Brown & Harris reported that 50% of their depressives were caused by a life event, some reports using multiple regression analysis have indicated that the variance explained by life event stress is less than 10% (e.g., Gersten et al. 1977; Andrews et al. 1978; Henderson et al. 1982). In a recent review of eight controlled prospective studies on life events and minor psychiatric morbidity, Tennant (1983) has concluded that the evidence does not support "any substantial causal role in neurotic illness". It is thus obvious that the study of life events and minor psychiatric morbidity has not yet established its adequate conceptual framework and methodology, and has still awaited for continuing effort.

Some researchers have attempted to explain the sex difference in minor psychiatric morbidity with differential rates of acute life events between the two sexes. However, studies have indicated that there is no such difference (Myers et al. 1971; Henderson et al. 1980). Nonetheless, women have been found to experience more chronic social stresses, such as lower education, lower socio-occupational status and income, and fewer leisure activities (Radloff & Rae, 1979). In fact, the various social role hypotheses on minor psychiatric morbidity have explicitly or implicitly linked the high morbidity risk to the higher chronic stress supposed to be encountered by a particular social role.

One major problem in studying the nature of the relation between chronic social stress and minor psychiatric morbidity is the formidable difficulty of recording the time sequence between them. The insidious onset of chronic stress has rendered the investigation of their causal influence on psychiatric morbidity far more difficult than that of acute life event stress. Sometimes, acute life event stress can turn into chronic stress (the case of unemployment is a

good example), and the impact of such stress on psychological health is likely to be changing over time. The effect of the stress might further be influenced by other mediating psychosocial variables (such as social support) and the coping style and personality of the man concerned. Thus, cross-sectional surveys at different point of time under a persisting stress would very likely produce different associations between stress and psychiatric morbidity. These problems can only be better tackled by intensive prospective controlled study.

e) Summary of literature review

A review of community studies of mental disorders have revealed significant improvement in case finding methods and research strategy in the past twenty years. Although evidence has now clarified the relationship between biopsychosocial factors and functional psychoses to a considerable extent, the same progress has not yet been reached for minor psychiatric morbidity. Current empirical data have suggested that genetic factors are less important than psychosocial factors on the aetiology of minor psychiatric morbidity. However, problems both in case definition and research methods have obstructed the progress of community survey on the relationship of such morbidity with psychosocial factors hitherto.

In the evolution of case definition for minor psychiatric morbidity, the criteria for caseness has been extended from the hospital neurotic patients to the generally milder community cases with both non-specific psychopathology and lowered threshold of symptom severity. It is argued that such new case definition can better fulfill the two basic functions of epidemiology, namely "completion of the clinical spectrum" and "delineration of new syndrome" in the study of minor psychiatric morbidity, and will thus

open the possibility of establishing a more adequate diagnostic system for this group of morbidity.

The development of two-stage case finding methods with well assessed instruments has successfully overcome the shortcomings of questionnaire and lay interviewer survey commonly used and facilitated both hypothesis testing and study of psychopathology. However, psycholinguistic problems remained to be solved if cross-cultural comparative studies of minor psychiatric morbidity are expected to give valuable results. The cross-national reliability of minor psychiatric symptomatology and diagnosis, unlike that of functional psychoses, awaits further research effort.

Over the years various socioenvironmental risk factors have been investigated regarding minor psychiatric morbidity. They include differential cultures and races, macroscopic sociocultural change (such as urbanisation), demographic variables within societies (such as age, sex, socioeconomic status, marital status, and employment status), acute and chronic psychosocial stresses, as well as social supports. There has been no substantial evidence from community surveys to suggest a significant association between overall prevalence and culture, ethnicity, or urbanisation. On the other hand, a higher prevalence of morbidity has often been revealed among the females, the unemployed, the widowed, divorced, and separated, and the lower socioeconomic group. Meanwhile, The relation of life event stress and social support with minor psychiatric morbidity, both in retrospective and prospective community surveys, has been found to be rather controversial in either independent or joint effects.

Some researchers have emphasised the interactive effect between socioenvironmental factors and psychosocial stress. They have proposed various hypotheses based on such interaction for aetiological

explanation of minor psychiatric morbidity. Most of these hypotheses are related to social role and environmental risk factors, either with the associated chronic stress (such as the care of young children, marital problems, housewife frustration), or with the interaction of life event stress and/or poor social support. However, differences in sampling, variable definition, research strategy, and statistical method have rendered the failure of replicating these hypothetical models.

The majority of community studies of minor psychiatric morbidity have been carried out in Western societies with only a few exceptions. This review has repeatedly stressed the need for community surveys of this kind in non-Western societies in order to perform cross-cultural comparison. In view of the vivid sociocultural differences between Western and non-Western societies, the socioenvironmental risk factors of this morbidity in both of them are quite likely to be more or less different. A well-conducted community survey in non-Western society can be expected to explore the similarities/differences of the patterns, distributions, and risk factors of minor psychiatric morbidity between the two kinds of societies in a cross-cultural context. Such comparison will make valuable contribution in elucidating the relative importance of biological and socio-environmental factors, and, in assessing the generality/particularity of hypotheses proposed in Western surveys hitherto.

The present study attempts to be one such kind of community survey in Taiwan. Since there were three major community surveys as well as a few hospital studies on symptomatology of minor psychiatric morbidity conducted there, the following parts of this review will first assess these studies in the light of the methodological considerations previously outlined. Then, the rationale in the design

of the present study, as well as its aims will be presented.

PREVIOUS WORK ON MINOR PSYCHIATRIC MORBIDITY IN TAIWAN

a) Morbidity rates

There were two large-scale community surveys of all mental disorders carried out in Taiwan, one in 1946-8 and the other in 1961-3 (Lin, 1953; Lin et al. 1969). Both the research team and the case definition applied in these two surveys were claimed to be essentially the same. However, neither a standardised psychiatric interview, nor a well-assessed screening questionnaire was used. The researchers used key informants and a brief family interview, lasting for about 5 to 10 minutes, to screen the entire population under survey via home visit. Only suspected cases were examined by a psychiatrist afterwards. Rin et al. (1966) carried out a third community survey of psychophysiological reactions on a sample from one of the three communities studied in the former two surveys. Direct (unstandardised and non-structured) psychiatric interview was carried out on every respondent to test a number of hypotheses concerning modernisation.

The first two surveys revealed rather stable prevalence rates of psychotic disorders which were compatible to other epidemiological findings, as well as very low prevalence figures of minor psychiatric morbidity (1.2/1000 in 1946-8 and 7.8/1000 in 1961-3). The researchers attributed the increased prevalence of neurosis between the two surveys to socioenvironmental changes during the 15 years. However, the case finding method of these two surveys, as previously criticised, was with the likelihood of missing substantial cases of minor psychiatric morbidity (Interestingly, the rates of neurosis in urban and rural areas in their second survey were very similar, being 8.0/1000 and 7.2/1000 respectively). The prevalence rate of neurosis

found in the third survey was 13%, a figure much closer to that found in most community surveys. The remarkable difference between this figure and that found in the first two surveys is obviously mainly due to the inadequate case finding method of the latter since all the three surveys were performed with the same case definition in the same areas, and, both Rin et al's survey and the survey in 1961-3 were very close in time.

Hence, the two Formosan surveys, albeit designed to be historical study in the community, are unable to give convincing evidence to support the notion of negative urban effect on mental health. On the other hand, cross-sectional comparison of morbidity rates between rural and urban communities in the second Formosan survey failed to find any significant difference. Although the comparison between these rates and that found in both rural and urban communities in Western countries could examine the interactive effect of urbanisation and culture/ethnicity, methodological shortcomings of the Formosan studies have rendered such comparison much less significant.(1)

In another comparative study between the aboriginal and the Chinese communities in Taiwan, the prevalence rates of all mental disorders (in particular, the neurotic disorders) among them were found to be the same (Rin & Lin, 1962).

b) Symptom manifestations

Somatisation has been repeatedly mentioned to be a major characteristic in the manifestation of minor psychiatric morbidity among the Chinese. It was claimed to be responsible for the low rates of depressive illness among the Chinese with Western

Note (1): In Mainland China, some large-scale epidemiological surveys have been reported to be conducted after 1970 (Lin et al. 1981), which have applied the similar method of case finding like the two Formosan surveys. The overall prevalence rate of mental disorders was around 0.7% with major psychoses predominated.

psychiatric diagnostic criteria (Lin, 1982). Lin further summarised various sociocultural explanations, including the influence of traditional Chinese medical theories, the social recognition and acceptance of somatic symptoms and complaints, the cultural taboo on disclosing one's emotions in public, and the oral-hypochondriacal cultural traits. Evidence in support of this notion, however, was mainly collected from hospital study (e.g., Tseng, 1975; Kleinman, 1977). Findings from patient study, as previously commented, can not tell us the complete picture of symptom patterns and distributions of cases in the community.

Furthermore, it is likely that the sociocultural explanations cited by Lin are actually factors contributing to the decision of the Chinese neurotics to seek medical help. In other words, the probability of seeking help is much higher among the community cases who have somatic symptoms and/or somatic concern than those who do not have, since researchers advocated the somatisation hypothesis have mainly studied the former group. To test these hypotheses would require the study of community cases.

The community study of psychophysiological disorder by Rin et al. revealed that 42% of their sample had "psychophysiological reactions" and, 85.5% of the neurotic cases found in this survey were associated with such "reactions". The investigators separated physiological symptoms strictly from emotional symptoms in their symptom and case definitions which was based on the DSM-I (American Psychiatric Association, 1952). Such definitions, being heavily shadowed by dynamic theories, had included classical psychosomatic illness (for instance, peptic ulcer, hyperthyroidism etc.). Hence, it is very likely that the very high rates of both total cases (54%) and neurotics with physical symptoms have included a considerable

proportion of respondents with classical psychosomatic illness who probably would not be considered by most investigators nowadays as having minor psychiatric morbidity. Meanwhile, the help seeking behaviour of Chinese community cases with such morbidity has not been well investigated hitherto.

Thus, the notion that somatisation is the major feature of minor psychiatric morbidity among the Chinese and some other non-Western ethnic groups needs further examination. Meanwhile, the definition of somatic symptoms might better be operationalised and based on phenomenological concepts instead of those less scientific dynamic speculations.

THE PRESENT STUDY AND HYPOTHESES

Having reviewed earlier studies on minor psychiatric morbidity in Taiwan, it is clear that they all had profound methodological problems which have considerably lowered the value of their quantitative and qualitative findings and the significance of hypotheses derived from them. Since the Chinese and his influential culture in Eastern world are distinctively different from Western societies, crosscultural comparison is highly indicated. Moreover, there has been no well-conducted community survey of minor psychiatric morbidity in any Chinese society around the world despite the fact that the Chinese has occupied a quarter of the world's total population.

The present study has selected the Chinese communities in Taiwan to complete such a task. Apart from practical consideration of feasibility (The investigator is unable to conduct such surveys in Mainland China), the fact that current Chinese societies in Taiwan have ranged from the very urbanised to the considerably traditional (rural) enables the examination of the effect of urbanisation. Being

the first attempt of a well designed large-scale community survey of minor psychiatric morbidity in the Chinese society, the study design is mainly cross-sectional (Nonetheless, a small proportion of cases have been followed up).

There are two fundamental requirements in the design of the present study which have to be fulfilled. They are the cross-cultural comparability of symptoms and caseness, and the preparation of reliable, valid, and comparable case finding instruments suitable for use in Chinese communities. The former was accomplished by adopting and modifying (slightly) the operational definition of symptoms and caseness of minor psychiatric morbidity constructed by the CIS workers, as well as the performance of an inter-rater reliability study between the CIS workers and the investigator. The latter was by conducting a pilot study since there have been no such feasible instruments in Chinese. In addition, the prevalence figure of minor psychiatric morbidity found in previous community surveys in Taiwan by Lin and his colleagues, having been criticised before as obviously unreliable, can not be used to estimate the proper sample size for the present study. A preliminary prevalence rate was therefore obtained in the pilot study.

The main study was then conducted in both urban and rural communities in Taiwan. The morbidity rates of minor psychiatric disorders, their patterns and distributions across various demographic and socioenvironmental variables in these communities were investigated. The psychopathology of cases revealed in the study were investigated and a number of social risk factors found in Western surveys were also examined. Meanwhile, a number of hypotheses have been formulated and were tested in this study.

Hypotheses

The main hypotheses of the study are as follows:

1. Patterns of symptomatology have been reported to differ between Eastern and Western cultures; in particular, it has been reported that somatisation is the commonest feature of neurotic disorders in Chinese societies. Hypothesis 1 is therefore, that although the basic neurotic symptoms found in surveys in Western societies will also be found in Taiwan, there will be differences in patterns and manifestations of the symptoms.

2. In view of the largely similar prevalence rates of psychiatric illness found in a number of community surveys carried out in non-Western societies (e.g., Carstairs, 1975; Orley & Wing, 1979) as compared with that in surveys in Western societies, hypothesis 2 is that the prevalence of minor psychiatric morbidity in Taiwan will be similar to that found in previous surveys.

3. Although some previous studies (e.g., Helgason, 1964; Murphy & Taumoepeau, 1980) found a higher overall prevalence of minor psychiatric morbidity in urban than in rural communities, many others failed to find such evidence (e.g., Comstock & Helsing, 1976; Krupinski, 1979; Brown & Prudo, 1981). Hypothesis 3 is therefore that there will be no significant difference of overall prevalence rates of minor psychiatric morbidity between urban and rural communities in Taiwan.

4. Several studies in the West have found a higher prevalence of minor psychiatric morbidity among female community respondents, and significant associations between such morbidity and the female social role stress (such as the frustrations of housewife work, the

care of young children, and marital dissatisfaction). In view of the vivid sociocultural differences between Chinese and Western societies with regard to the female social role, hypothesis 4 is therefore that while a similar higher prevalence of female minor psychiatric morbidity and an association between such morbidity and female role stress will be revealed in Taiwan, the nature and/or the significance of the stressors will differ from those found in Western societies.

5. Unemployment has been found to be related to minor psychiatric morbidity in many surveys in Western societies. Hypothesis 5 is therefore, that a higher prevalence of minor psychiatric morbidity will be found amongst the unemployed in Taiwan.

CHAPTER II

METHOD

Having reviewed various case finding methods which have so far been used in psychiatric community surveys, the two stage method was chosen for the present study. This strategy is believed to be able to cover the need of accurate clinical assessment and to reduce the considerable cost in time, money, and manpower of the field work. The present study includes a pilot study and the main study proper. The aims of the pilot study has been stated in Chapter I and the details and results of the study have already been published (Cheng, 1985., please refer to Supplementary 1). Therefore, only an outline of it will first be given here with emphasis on the sampling method which was again applied in the main study.

THE PILOT STUDY

The preparation of the case finding tools

A Chinese Health Questionnaire (C.H.Q.) was designed to be validated in the pilot study and to be used as the first stage case finding tool. The C.H.Q. contained two sets of screening items: the 30 items of the G.H.Q. treated with two stage translation, and 30 new items designed by the investigator to reflect the Chinese way of expressing their emotional distresses (Appendices 1 and 2 list the back translated G.H.Q. 30 items and the new CHQ 30 items).

The Clinical Interview Schedule (C.I.S.) was chosen as the second stage diagnostic tool. There were two reasons for this choice. First, the CIS and the GHQ were developed by the same research team with the same purpose, the community survey of mental disorders, and with the same concept of "caseness" previously discussed in Chapter 1.

Secondly, an inter-rater reliability study between the investigator and two British senior psychiatrists had yielded satisfactory results (Cheng et al. 1983). These facts will enable crosscultural comparisons between the result of present study and that of the British survey using the similar tools (The back-translation of the CIS with some modifications for its Chinese version is shown in Appendix 3).

The sampling

A sample of 150 community respondents (80 males and 70 females) were selected from the Sunming District, Kaohsiung City for this pilot study. A multi-stage random sampling with probability proportional to population size was applied on two levels of administrative areas below District: Li and Ling. The census record provided population statistics of different age and sex groups, as well as the name, age, sex, marital status, and occupation of each inhabitant in every household, and their relationships. This enabled the construction of a thorough sample frame with all persons over 15 years of age for each selected Ling. It was known beforehand that a substantial proportion of the household records was inaccurate. In one epidemiological survey in Taipei, the non-response rate reached 32%, mainly comprising those who did not actually live there (Chang et al. 1984). Therefore, a household check up on the initial sample frame was conducted by a civil servant and the research assistant. The civil servant was familiar with the condition of the households. The lists of demographic information of the households were corrected according to the actual condition observed. The final lists thus only contained those who were residents during the period of investigation.

The community sample was drawn from them.

Another sample group was obtained from a community mental health center in Kaohsiung to serve as the "patient" group, in order to test the validity of the CHQ and the consistency of the CIS assessment. The community mental health center belonged to the Provincial Health Authority. It has been run by a mental health team including a clinical psychologist, a social worker, a nurse, and a part-time consultant psychiatrist. 150 consecutive attenders between 1 August 1982 and 31 March 1983, who had never previously sought psychiatric help, were included in this sample.

The conduct of the field work

The field work of the pilot study was carried out between 4 November, 1982 and 6 April, 1983. Each of the selected respondents was first contacted by the research assistant and the civil servant. They were asked whether they would accept a health visit by a doctor. If the subject agreed, then an appointment was made.

The field interview began with a simple physical check up. An inventory on general health and help seeking behavior was then administered by the research assistant. The respondent was next asked to complete the CHQ. Then, the investigator conducted the CIS interview without knowledge of the score on the CHQ. Finally, sociodemographic data were collected by the assistant. Some additional information concerning the respondents' usual behavior and interpersonal relationships was obtained from the civil servant. There was thus no time lag between the first and second stage interviews. If the respondent requested medical help, any useful suggestion and sometimes a few days' prescription were given. It was

found that most of the respondents took a positive attitude towards the health visit and was very cooperative in providing necessary information, especially when medical help was supplied. It was also helpful in establishing a trustful relationship. A few respondents even visited the investigator after the health visit for further treatment.

The response rate

The response rate was 97.3%, only four of the sample refused the health visit. The civil servant played a key role in eliminating some respondents' insecurity or suspicion by his active explanation and encouragement, a strategy which was derived from the previous community surveys by Lin et al (Lin, 1953; Lin et al, 1969). The 150 respondents from the community mental health center were interviewed by the same procedure and none of them refused the interview. They included 83 males and 67 females.

The community sample was found to be representative on age, sex, and marital status distribution of the Kaohsiung and national population.

Validity of the GHQ & CHQ

Those respondents with an Overall Severity Rating (OSR) of 2 or above on the CIS were identified as "case". Various cut-off points of the GHQ and the CHQ scores were computed against the case/noncase classification of the CIS, and optimal cut-off points were decided. It was found that while the validity of the GHQ was satisfactory, the sensitivity was improved by the addition of the 30 culturally relevant items. There were no significant differences between the validity coefficients and the mean CHQ scores of both sexes.

The differences between community normals, cases, and patients on

their mean GHQ and CHQ scores were quite significant. The mean scores of each of the CIS symptom profile concerning neurotic phenomena for high CHQ scorers were obviously higher than those for low CHQ scorers. These provide further evidence for the validity of the CHQ. The validity coefficients of the GHQ and CHQ were found to be rather satisfactory when compared with those of other community surveys.

The preparation for a shorter version of the CHQ

As the practical value of the CHQ would be increased by the construction of a shorter version, provided that its validity is unaffected, discriminant function analysis of classical linear method was carried out. The details of this analysis and its results have been published (Cheng & Williams, 1986., please refer to supplementary 2). In brief, there were three groups used in the analyses: the community normals (n=112), the community cases (n=38), and the patients (n=138). Two different ways of data grouping were tried separately. First, an attempt was made to find two discriminant functions which separated three groups; then, an attempt was made to find a single discriminant function to separate the two community groups (community cases and normals). In each case, a stepwise variable selection method was used with prior probability equal to group size.

The first analysis found two functions with poor discrimination between the three groups: the overall classification rate being 77.4%.

The second analysis found a satisfactory discriminant function which correctly classified 98% of the community normals and cases. There were totally 12 items of the CHQ resulted from this analysis. They became the new CHQ-12 as a valid screening tool for use in the main study, and their validity can be further assessed.

The CIS findings

The CIS has two different kinds of ratings: the score of Reported Symptoms, which takes into account only the respondents' subjective description of their mental condition, and the score of Manifest Abnormalities, which comes from the psychiatrist's own judgment of the respondent's mental state.

There was a marked difference between the mean scores of Reported Symptoms and Manifest Abnormalities of community respondents and the community mental health center groups. This reflects the fact that the severity of the clinical phenomena of the community respondents is significantly lower than that of the community mental health center group. On the other hand, the mean scores between these two groups at each level of the OSR were similar. This reflects both the consistency of the clinical judgment in different settings, and the inconsistency between the clinical severity and the decision to seek help. In other words, clinical severity is not the only factor in the decision to consult a mental health worker.

The prevalence rate of mental disorders among the community respondents was 26.0% (s.e. 3.6%). All the cases belongs to the category of minor psychiatric morbidity with anxiety and depression as the most predominant symptoms.

The sample size for the main study

With the preliminary prevalence figure of this pilot study, the adequate sample size for the main study can thus be calculated (Moser & Kalton, 1971). Assuming that the maximum acceptable standard error is 1.35%, then the sample size can be calculated to be 1050.

Significance of the pilot study

The pilot study has completed its two initial tasks, i.e., the

establishment of reliable and valid case finding instruments and the computation of adequate sample size for the main survey from a reliable preliminary prevalence rate found in it.

The CIS was found to be feasible for the community study of minor psychiatric morbidity in Taiwan. Its first part, concerning the physical health investigation, was found to be especially useful in making a good initial contact and establishing trust. Thus, the following parts concerning psychological phenomena became far less sensitive to the respondents. The wording and sequence of the questions were found to be acceptable to the respondents. Many of the CIS questions were found to be culturally relevant to the Chinese in Taiwan. However, modification was still needed, particularly for items concerning emotional distress, and additional questions were sometimes put into. The operational definition of a few items was also modified in order to fit the characteristic of the Chinese culture. These modifications, which was based on the field experience, was believed to have contributed to the resolution of psycholinguistic problem and the crosscultural comparability in the main study [see chapter 4 for more detailed discussion]. Both the satisfactory inter-rater reliability and the consistency of the CIS ratings in different settings have brought reasonable confidence to its application in the main study.

The one-week prevalence rate of 26.0% of minor mental disorders found in this pilot study gives initial support to the second hypothesis and the comment on the inadequacy of case finding method of the two previous community studies in Taiwan carried out by Lin et al. (see Chapter 1, P.51). The higher prevalence of minor mental disorders among women revealed in this pilot survey gives another supportive evidence to the fourth hypothesis. These, together

with the issue of the effect of urbanisation to the raise of prevalence (Hypothesis 3), will be further examined in the main study with adequate sample size and different communities of different degrees of urbanisation.

The tendency for women to report more mental distress observed in Western surveys was not found in this pilot study, since there is no difference between the mean CHQ scores of both sexes. Hence, the psychosocial explanation against female vulnerability to neurosis with reporting behavior can not find its support from this study. This will also be further investigated in the main study. Finally, the method of constructing the sample frame and the use of the civil servant was learned to be vitally important in obtaining both the representative sample and high response rate. The arrangement of the sequence of the field interview was found to be feasible for establishing good relationship. These strategies and methods will therefore, be applied in the main study.

THE MAIN STUDY

The study communities

In order to test the hypothesis about urbanisation and mental disorders, different communities with different degrees of urbanisation will have to be selected. Traditional societies have been described to possess the following characteristics (Murphy & Taumoepeau, 1980):

(a) respectful of law and tradition;

(b) relatively free from social and technological complexity;

(c) relatively undisturbed by outside influence;

(d) with many generations of stable settlement;

(e) predominantly agricultural.

However, it is not easy to find a society typical like this in present-day Taiwan where nearly all the communities have more or less been under the influence of urbanisation. The only one plausible strategy used here is to choose a community with the least influence of urbanisation, a community of most urbanised city, and a community in between. Then, the morbidity rates of minor mental disorders can be compared with the degrees of urbanisation in these three communities cross-sectionally.

Since the sample size estimated from the pilot study for the main survey is 1050, it was decided to choose three communities - one rural, one suburban, and one urban - with 350 sample size for each of them.

The population index used for the selection of these three communities was the statistical table about the distribution of the employed population aged 15 and over by sex and industry for each administrative area published by the Ministry of the Interior (Taiwan-Fukien demographic fact book, 1982). The industry of this table was divided into two main categories: "agriculture" and "nonagriculture". The three communities chosen according to the population proportion of these two categories for the main survey are: Yenpu Hsiang (rural), Chishan Chen (suburban), and Kaohsiung Municipality (urban) respectively.

Yenpu is located in Ping-tung Hsien (an administrative area with a population near one million), one of the main agricultural areas in Taiwan. It had a population of 28101 at the end of December, 1982 with 76.6% of adults working on the farm. There was no restaurant, cinema, and only one small inn. There was no bank except one agricultural cooperative society. The main social gathering place was the square in front of the temple which existed in every village

(There were 12 villages separated by farms). According to the Hsian Health Bureau's report, there were totally 7 clinics (no hospital) and 23 traditional and western pharmacies at the end of 1982. Yenpu is close to the southern part of Central Mountains. The main agricultural plants included rice, fruits, maize, and sugarcane. Some of the agricultural population raised chickens or pigs, or engaged in pisciculture. The economic condition in general was not good in recent years due to the lowered price of many products. The only one large electronic firm, invested by the Japanese, hired over one thousand workers from Yenpu and neighboring areas. Most of them were young, single women whose income had become important in supporting their families' economy.

Many of the village inhabitants shared the same family name and relations. There are two big clans who have been fighting with each other in the interests of political power and economy for over 50 years. The village people still firmly held to their traditional beliefs and rituals, in spite of the fact that television and modern electric home equipments had already entered into their lives. A large proportion of the residents have lived there for generations (as indicated by 90% of the sample). 52% of the sample were found to have three generations or above in their family structure. Public transportation had reached each village along the small countryroads, some of which were still stone-paved. In general, Yenpu was socially, culturally, and economically remained mainly as a traditional agricultural community which has been undergoing urbanisation with modest speed.

Chishan has been a township since the Japanese occupation period (1895-1945). It is located between the Eastern Plain and the Central Mountains of Taiwan and thus has been the center of transportation

amongst its neighboring areas. It is a heterogeneous administrative area on sociodemographic and economic distributions. The northern and southern parts of its boot-shaped terrains were largely agricultural areas with banana as the main plant. The central area is a typical township with industrial, commercial, and political affairs and institutions. This area was marked out as the suburban community to be investigated. It had a population of 16,104, one third of the total Chishan population, at the end of December, 1983. 22.1% of this area's adults worked as farmers. There were five banks, several modern restaurants, hotels, and cinemas. One car company had a division here. There was a public general hospital, 32 private hospitals and clinics, as well as 81 traditional and western pharmacies. In the past few years, both in-migration from its neighboring secluded villages and out-migration to cities have been observed with rather slow speed. The temples, unlike those of Yenpu, were hidden away from the main road due to urbanisation. There was a large public bus station. 32.9% of the sample's families had three or four generations living together. A significantly smaller proportion of the sample had lived there for generations (63.5%) as compared with Yenpu.

Kaohsiung is the second largest metropolis in Taiwan with a population of 1,249,723 at the end of January 1982. It has undergone rapid urbanization in the past 15 years and has become the largest industrial city. Some of its peripheral districts were newly developed with relatively lower population density and could only be categorized as suburban areas. Table 2.1 lists the population size and density, as well as the proportion of agricultural adult population of the 11 administrative districts. It was decided that those districts with a population density over twenty thousand per

Table 2.1 Sociodemographic characteristics of the Kaohsiung Districts (at the end of 1983)

Name of Districts	Population size	Population density (no./Km2)	Agricultural population (%)
Hsinhsing*	78,888	39,915	4.9
Yencherng*	42,168	29,778	2.0
Chienjin*	45,485	24,490	3.8
Lingya*	201,714	24,744	4.9
Sunming	258,368	13,508	8.4
Chienjenn	199,505	10,426	6.2
Gusun	102,159	6,928	8.6
Tsoying	107,676	5,554	6.9
Nantzu	96,874	3,751	10.0
Chijin	35,500	24,250	26.7
Hsiaugung	93,406	2,344	22.1

*Sampling Districts

square mile and an adult population of agriculture less than 5% were to be selected for the sampling. Thus, four districts - Hsinhsing, Yencherng, Chienjin, and Lingya, were chosen. Table 2.2 lists some sociocultural characteristics of the rural, urban and suburban communities to illustrate their degrees of urbanisation.

The sampling

The same methods and strategies used in the sampling of the pilot survey were again applied here. 176 males and 174 females were selected in Yenpu, 156 males and 194 females in Chishan, and 171 males and 179 females in Kaohsiung respectively. It was interesting to find that the civil servants of Yenpu and Chishan were much more familiar to the condition of the households than those of Kaohsiung. Hence, home visit was not required on several occasions for the check of the census record in Yenpu and Chishan. This also reflects both the effect of urbanisation on interpersonal relationship and the different degrees of stability of residency in three communities. There were totally 1050 (503 males and 547 females) sample subjects selected for the main study.

The survey instruments

The CHQ-12 and the Chinese version of the CIS were used as the case finding tools. Considering the possibility of any change on the classification power of the CHQ-12 in Yenpu and Chishan, all the 30 items derived from the first step of discriminant analysis on original 60 items of the CHQ between community normals and cases in the development of the CHQ-12 were included in the field survey. By so doing, further analysis for any modification of the CHQ-12 is possible.

The inventories on general physical health, help seeking

Table 2.2 Sociodemographic characteristics of the rural, suburban, and urban communities

Variables	Rural(%)	Suburban(%)	Urban(%)
Agricultural population	76.6*	22.1**	4.4**
Population density (no./km2)	435**	2213**	27478**
Education			
Illiteracy	33.6**	15.0**	10.0**
Elementary (9 years)	45.0	50.3	35.2
High school	19.3	25.3	32.0
College & above	2.0	9.4	22.9
Family structure#			
< 2 generations	48.9	67.0	71.1
≥ 3 generations	51.1	33.0	28.9
Stability of settlement#			
≥ 2 generations	90.3	63.2	28.3
1 generation only	9.7	36.8	71.7

*end of December, 1982
**end of December, 1983
#based on samples' data

behavior, and sociodemographic variables used in the pilot study were modified according to the experiences obtained in the pilot study and then applied here. An additional inquiry about any psychosocial stress experienced by the respondents within six months either before the onset of psychiatric illness (case group), or before the health visit (noncase group) was performed during the second stage clinical interview, in an open-ended fashion. Other psychosocial variables, including care of young children under 15, job satisfaction, marital relationship, and women's attitude toward housekeeping were also inquired. Appendix 3 lists the inventory.

The field work

The field work was carried out between 1 December 1983 and 27 April 1985. The same procedure conducted in the pilot survey was again performed here. After the respondents had completed the CHQ (30 items), the research assistant immediately computed the discriminant scores for them according to their response on the 12 items derived from the discriminant analysis. The discriminant scores of individual respondent can be computed by adding the discriminant coefficients of those items with morbid response (i.e., "rather more than usual" and "much more than usual") to the constant. Then, they can be compared with the group centroids of both case and normal groups. If the discriminant score of an individual respondent located near the group centroid of the normals, then the probability of this respondent to be a mentally normal person is higher than to be a case. The first stage screening can thus be completed and the necessity of second stage clinical interview can be decided at once. All potential cases and every one in three potential noncases randomly assigned immediately received the CIS interview by the investigator.

The follow up study

In order to investigate the sex difference in outcome of minor psychiatric morbidity, a small-scale follow up study was carried out on the 38 cases found in the pilot survey. The study was conducted by the investigator with the Chinese version of the CIS approximately one year after the initial interview.

Data analysis

Both the CIS status (i.e., case/noncase) and the CHQ status were used as the morbidity indices (dependent variables) to correlate with various demographic and socioenvironmental factors, as well as psychosocial stresses (independent variables) in hypothesis testing. The case-control study method (Schlesselman, 1982) was applied to respondents who received the CIS interview, with the noncase group serving as the control group.

Simple descriptive statistics and chi-square test were first applied to assess the association between each of the independent variables and minor psychiatric morbidity (both CIS & CHQ status). The relative risk for each specific risk factor was also estimated in terms of its approximation, the odds ratio.

In the next step of analysis, the possibility of confounding of the individual effects and the interactive effects between two or more independent variables were examined. Conceptually, every independent variable with statistically significant association can be regarded both as a potential risk factor to the dependent variable (psychiatric morbidity), and as a potential confounding variable to each of the other individual effects. The confounding effect can be dealt with by adjustment procedures with stratification or multivariate analysis. The interactive effect can be interpreted

using either additive or multiplicative models and the results may not be the same. In practice, however, most techniques are multiplicative (and certainly for dependent
variables in proportions).

In the present study, the multiplicative model is favored and multivariate analysis is performed. This statistical technique can deal with both confounding and interaction at the same time. In view of the nature of the measurement on dependent variables (both CIS and CHQ data were expressed in proportions), the adequate statistical model would be the linear logistic model (Dunn, 1981; Schlesselman, 1982; Knuiman & Burvill, 1984). A linear model is one in which the dependent variable is modelled in terms of the individual and joint effects of a number of explanatory (independent) variables. Estimates of each of the logistic parameters in the analysis are interpreted as being adjusted for the effects of the remaining variables and any confounding effect is thus controlled for. The linear logistic modelling was applied to the proportion of cases and that of CHQ(+) scorers separately. A standard hierarchical model building procedure was used in finding the model of best fit, i.e., the model in which every term (including interactive effects) is necessary, and to which the addition of extra terms does not significantly improve the goodness of fit.

CHAPTER III

RESULTS

RESPONSE RATES

The response rates of the rural, suburban and urban communities were 100%, 99.4%, and 98.9% respectively. The total response rate was 99.4% (n = 1044), a very satisfactory figure. The two non-respondents of the Chishan community were middle-aged, married women who hid away at home visit. The four non-respondents in Kaohsiung sample included one young and one old married women, as well as one young and one middle-aged, married men. The two women refused to see the researchers. The young man had run away from home with suspected legal problems. The middle-aged man in jail refused the health visit after indirect contact through the prison officer (another male respondent in jail accepted the interview which was completed there). The civil servant again played a very important role in arranging the visit like that in the pilot survey.

REPRESENTATIVENESS OF THE RESPONDENTS

The age and sex distributions of the respondents of the three communities and the comparison between them and the corresponding data of the mother populations are shown in Tables 3.1, 3.2, and 3.3 respectively. There was no significant difference between the respondents and their mother populations on both age and sex distributions in all three communities.

The distribution of marital status among the respondents of the three communities and their mother populations are shown in Tables 3.4, 3.5, and 3.6. There was again no significant difference between the respondent groups and the corresponding mother populations for

Table 3.1 Age and sex distribution of community respondents compared with 1982 census in Yenpu

Age group	Respondents(%)		Yenpu(%)	
	Male	Female	Male	Female
15 - 24	24.4	26.5	34.2	37.2
25 - 34	20.5	20.7	24.2	21.6
35 - 44	14.8	15.5	13.7	13.2
45 - 54	17.6	19.5	13.3	14.5
55 - 64	10.8	8.6	9.1	9.4
65^{+}	11.9	9.2	5.4	4.2

For Respondents/Yenpu:

Male, X^2 8.85 df 5 N.S.

Female, X^2 8.55 df 5 N.S.

Table 3.2 Age and sex distribution of community respondents compared with 1983 census in Chishan

Age group	Respondents(%)		Chishan(%)	
	Male	Female	Male	Female
15 - 24	12.2	21.9	17.6	21.2
25 - 34	24.4	22.9	19.1	20.4
35 - 44	22.4	18.2	17.4	20.0
45 - 54	21.8	16.2	21.5	18.0
55 - 64	10.2	9.9	14.1	9.3
65^{+}	9.0	10.9	10.3	11.1

For Respondents/Chishan:

Male, X^2 4.45 df 5 N.S.

Female, X^2 0.71 df 5 N.S.

Table 3.3 Age and sex distribution of community respondents compared with 1983 census in Kaohsiung

Age group	Respondents(%)		Kaohsiung(%)	
	Male	Female	Male	Female
15 - 24	22.9	25.9	24.2	28.0
25 - 34	24.8	30.2	28.0	28.0
35 - 44	19.1	14.3	18.5	16.9
45 - 54	14.0	10.6	13.4	13.3
55 - 64	14.7	11.6	10.8	8.5
65^{+}	4.5	7.4	5.1	5.3

For Respondents/Kaohsiung:

Male, X^2 1.36 df 5 N.S.

Female, X^2 2.90 df 5 N.S.

Table 3.4 Comparison of community respondents with 1982 census in Yenpu: Marital status

Martial status	Respondents(%)		Yenpu(%)	
	Male	Female	Male	Female
Single	30.1	19.5	40.4	27.5
Married	64.2	68.4	56.2	64.6
Others*	5.7	12.1	3.4	7.9

*including divorced, separated, cohabitating, and widowed.

For respondents/Yenpu:

Male, X^2 4.93 df 2 N.S.

Female, X^2 4.18 df 2 N.S.

Table 3.5 Comparison of community respondents with 1983 census in Chishan: Marital status

Marital status	Respondents(%)		Chishan(%)	
	Male	Female	Male	Female
Single	21.8	24.5	23.7	21.9
Married	75.0	67.2	69.2	64.1
Others*	3.2	8.3	7.1	14.0

*including divorced, separated, cohabitating, and widowed.

For respondents/Chishan:

Male, X^2 2.50 df 2 N.S.

Female, X^2 3.46 df 2 N.S.

Table 3.6 Comparison of community respondents with 1983 census in Kaohsiung: Marital status

Marital status	Respondents(%)		Kaohsiung(%)	
	Male	Female	Male	Female
Single	36.7	30.3	36.7	31.9
Married	59.5	60.1	56.3	55.9
Others*	3.8	9.6	7.0	12.2

*including divorced, separated, cohabitating, and widowed.

For respondents/Kaohsiung:

Male, X^2 2.18 df 2 N.S.

Female, X^2 1.03 df 2 N.S.

both sexes.

The socioeconomic status (S.E.S.) of the respondents was classified according to the occupation of the principal wage earner to reflect the real condition (By and large, the majority of married women and single males and females are at present economically dependent on their husbands or parents in Taiwan). As there was no classification of S.E.S. groups and no national statistics of the groupings in Taiwan for comparison, the criteria for this classification were adopted with some modification from the British classification (OPCS, 1980).(1) Table 3.7 shows the distribution of S.E.S. groups of the respondents in three communities. There was no significant difference between the two sexes across three communities. However, a significantly higher proportion of upper S.E.S. group was found among both sexes of the Kaohsiung respondents.

In general, the three respondent groups were found to be well representative of their mother populations.

VALIDITY OF THE CHQ AND WEIGHTED PREVALENCES

There were 9 respondents with a clinical diagnosis of psychotic mental disorder, and 12 with mental retardation. They were excluded in the calculation of the validity of the CHQ for their response on the CHQ was judged to be unreliable (In fact, most of them were unable to complete the CHQ). The remaining 1023 respondents had completed the CHQ (CHQR). Among them, 489 had received the CIS assessment

Note (1): A modified Chinese version of the Standard International Occupational Prestige Scale, originally developed by Treiman (1977), was published by Chu (1985) after the present survey had been completed. The S.E.S. of the respondents in the present study was re-classified according to this scale and compared with the primary classification. Although differences between the two classifications were found in a few respondents, such difference became nearly absent when S.E.S. was only categorised into skilled and non-skilled workers. Data analysis in Chapter 3 was therefore based on the latter categorisation.

Table 3.7 Distribution of socioeconomic groups in three communities

S.E.S. groups	Yenpu(%)		Chishan(%)		Kaohsiung(%)	
	Male	Female	Male	Female	Male	Female
Upper (Professional & Semi-professional)	2.4	2.3	6.5	5.4	19.9	20.5
Middle (Skilled worker)	60.9	60.7	66.9	59.7	65.4	62.7
Lower (Semi-skilled & Unskilled worker)	36.7	37.0	26.6	34.9	14.7	16.8

For sex difference:

Yenpu, X^2 0.00 df 2 N.S.

Chishan, X^2 2.75 df 2 N.S.

Kaohsiung, X^2 0.33 df 2 N.S.

Total, X^2 1.32 df 2 N.S.

For three communities:

Male, X^2 44.6 df 4 $P < .01$

Female, X^2 51.7 df 4 $P < .01$

conducted by the investigator (CISR). The relationship between the CIS assessment and the CHQ status of these respondents is shown in Table 3.8. The distribution of all CHQR on CHQ status, with or without clinical assessment, is shown in Table 3.9. The validity of the CHQ among respondents of the three communities was then computed using an appropriate weighting procedure, and the weighted prevalence rates in three communities were also calculated and shown in Table 3.10. It is obvious that the specificity figures in three respondent groups are all very satisfactory. However, the sensitivity values are all not so satisfactory, with the highest in Chishan (76.6%) and the lowest in Yenpu (61.2%). Nevertheless, the overall classification rates of the CHQ in three groups were found to be satisfactory, ranging from 83.6% to 92.1%. Table 3.11 shows the validity of the CHQ for male and female respondents in three communities. There was no difference on specificity figures between both sexes, but a consistently higher sensitivity for male respondents was found across three communities. The lower sensitivity of the CHQ for female respondents has also lowered the classification rate for females mainly observed in Yenpu. The comparison between true positives and false negatives on both sociodemographic and clinical variables is shown in a later section.

The weighted prevalence rates of all minor psychiatric morbidity in three communities are shown in Table 3.10 with a total rate of 24.2% (s.e. 1.35%). The rate for all mental disorders was 26.2% (s.e. 1.35%). These two figure were almost the same as the preliminary rates found in the pilot study. No obvious difference can be found between three communities except a slightly higher rate in Yenpu. The weighted prevalence rates for both sexes in three communities are shown in Table 3.11. The rates for females were consistently higher

Table 3.8 Relationship of the results of the CHQ screening with the clinical assessment by CIS in interviewed respondents in three communities

	Clinical assessment(CIS)								
	Yenpu			Chishan			Kaohsiung		
CHQ status	C	N	Total	C	N	Total	C	N	Total
CHQ positive	60	18	78	59	9	68	57	13	70
CHQ negative	13	77	90	6	83	89	7	87	94
Total	73	95	168	65	92	157	64	100	164

C: Case N: Noncase

Table 3.9 Distribution of probable 'case' and probable 'noncase' by CHQ screening in three communities

	Yenpu			Chishan			Kaohsiung		
	CHQ(+)	CHQ(-)	All	CHQ(+)	CHQ(-)	All	CHQ(+)	CHQ(-)	All
All respondents	78	264	342	68	272	340	70	271	341
Number interviewed	78	90	168	68	89	157	70	94	164
Number not interviewed	0	174	174	0	183	183	0	177	177

Table 3.10 Relation of the CHQ status with the CIS weighted against the sample population to give the CHQ validity and the prevalence in three communities

(a) Yenpu respondents

CHQ status	Clinical assessment: CIS status Case	Noncase	Total
CHQ (+)	78(60/78)= 60	78(18/78)= 18	78(78/ 78)= 78
CHQ (-)	264(13/90)= 38	264(77/90)= 226	264(264/264)= 264
Total	98	244	342

Sensitivity 61.2% (60/98) Classification power 83.6% (60+226/342)
Specificity 92.6% (226/244) Weighted prevalence 28.0% (98/350)

(b) Chishan respondents

CHQ status	Clinical assessment: CIS status Case	Noncase	Total
CHQ (+)	68(59/68)= 59	68(9/68)= 9	68(68/ 68)= 68
CHQ (-)	272(6/89)= 18	272(83/89)=254	272(272/272)=272
Total	77	263	340

Sensitivity 76.6% (59/77) Classification power 92.1% (59+254/340)
Specificity 96.6% (254/263) Weighted prevalence 22.1% (77/348)

(c) Kaohsiung respondents

CHQ status	Clinical assessment: CIS status Case	Noncase	Total
CHQ (+)	70(57/70)= 57	70(13/70)= 13	70(70/ 70)= 70
CHQ (-)	271(7/94)= 20	271(87/94)=251	271(271/271)=271
Total	77	264	341

Sensitivity 74.0% (57/77) Classification power 90.3% (57+251/341)
Specificity 95.1% (251/264) Weighted prevalence 22.3% (77/346)

(d) All respondents

CHQ status	Clinical assessment: CIS status Case	Noncase	Total
CHQ (+)	216(176/216)=176	216(40/216)= 40	216(216/216)= 216
CHQ (-)	807(26/273)= 77	807(247/273)=730	807(807/807)= 807
Total	253	770	1023

Sensitivity 69.6% (176/253) Specificity 94.8% (730/770)
Classification power 88.6% (176+730/1023)
Weighted prevalence 24.2% (253/1044)

Table 3.11 Validity of the CHQ of both sexes in three communities

	Male		Female	
	Case	Noncase	Case	Noncase
(a) Yenpu respondents				
CHQ (+)	20	7	40	11
CHQ (-)	11	131	28	94
Total	31	138	68	105
Sensitivity		64.5%		58.8%
Specificity		94.9%		89.5%
Classification rate		89.3%		77.5%
Weighted prevalence		17.6%		39.1%
(b) Chishan respondents				
CHQ (+)	17	7	42	2
CHQ (-)	4	126	14	128
Total	21	133	56	130
Sensitivity		81.0%		75.0%
Specificity		94.7%		98.5%
Classification rate		92.9%		91.4%
Weighted prevalence		13.5%		29.2%
(c) Kaohsiung respondents				
CHQ (+)	22	6	35	7
CHQ (-)	5	123	16	127
Total	27	129	51	134
Sensitivity		81.5%		68.6%
Specificity		95.3%		94.8%
Classification rate		92.9%		87.6%
Weighted prevalence		17.2%		27.0%
(d) All respondents				
CHQ (+)	59	20	117	20
CHQ (-)	20	380	58	349
Total	79	400	175	369
Sensitivity		74.7%		66.9%
Specificity		95.0%		94.6%
Classification rate		91.6%		85.7%
Weighted prevalence		16.2%		31.5%

than those of males. Since calculation of the variance of a weighted prevalence is complex, statistical comparisons of both sex and community differences will be illustrated in the later section using the case-control method.

Table 3.12 shows the diagnostic distribution with weighted prevalence for both sexes of all respondents according to the ICD-9. Minor psychiatric morbidity was found to account for 92.3% of all cases and both the anxiety states (300.0) and neurotic depression (300.4) had the first and second highest rates among all categories with a tendency of female predominance. Although the sample size in this survey was not large enough to examine the prevalence rates of psychotic disorders, the figures found were in general compatible to other studies. Since the main interest of the present study was the category of minor psychiatric morbidity, the discussion will first concentrate on the patterns and distributions of symptoms among cases with such morbidity. Then, the relationships between various socio-cultural factors and such morbidity will be analysed and illustrated. Here, cases with psychotic and organic conditions (n=21) were excluded and analyses were only performed upon all the CHQR.

SYMPTOMATOLOGY OF MINOR PSYCHIATRIC MORBIDITY

A majority of cases with minor psychiatric morbidity found in this survey exhibited symptoms milder than neurotic patients. Many of them showed a mixture of anxiety, depression, poor sleep, fatigue, poor concentration, irritability, and various somatic symptoms. They were in fact difficult to be fitted into most of the current diagnostic systems. However, they did feel significantly distressful about their physical and psychological symptoms and had sought for various kinds of medical help, including Western and traditional

Table 3.12 Diagnostic distribution of all mental disorders

ICD-9 categories	Weighted prevalence (%) Male (n 489)	Female (n 555)	Total (n 1044)
Non-psychotic disorders	79 (16.2)	174 (31.4)	253 (24.2)
Anxiety states (300.0)	55 (11.2)	109 (19.6)	164 (15.7)
Neurotic depression (300.4)	14 (2.9)	63 (11.4)	77 (7.4)
Hypochondriasis (300.7)	0 (0.0)	1 (0.2)	1 (0.1)
Adjustment reaction (309)	8 (1.6)	2 (0.4)	10 (1.0)
Alcoholic dependence syndrome (303)	2 (0.4)	0 (0.0)	2 (0.2)
Psychotic & Organic conditions	3 (0.6)	6 (1.1)	9 (0.9)
Schizophrenic psychoses (295)	2 (0.41)	2 (0.36)	4 (0.38)
Affective psychoses (296)	0 (0.00)	4 (0.72)	4 (0.38)
Circular, currently manic	0	1	1
Circular, currently depressed	0	1	1
Circular, in remission	0	1	1
Depressed type	0	1	1
Senile organic psychotic condition (290.3)	1 (0.20)	0 (0.00)	1 (0.10)
Mental retardation	7 (1.43)	5 (0.90)	12 (1.15)
Mild mental retardation (317)	5	3	8
Other specific mental retardation (318)	2	2	4
All mental disorders	89 (18.0)	185 (33.3)	274 (26.2)

Chinese doctors, pharmacies, herbs, folk healers, and the least, psychiatrists.

a) Prevalence of individual symptoms

Table 3.13 illustrates the weighted proportions of different levels on the Overall Severity Rating (OSR) of the CIS for CHQR of both sexes. The female CHQR have in general higher proportion over morbid OSR levels than male CHQR. Table 3.14 shows the prevalence rates of main symptoms for both sexes. The rates for females were higher than males on most items of both the Reported symptoms and Manifest abnormalities except obsessions where the reverse was true. Apart from obsessions, the rank order of rates on each of these two ratings was identical for both sexes. For Reported symptoms, the rates of somatic symptoms were the highest (37.1% in females and 19.6% in males), then followed by anxiety (26.1%), insomnia (21.7%), fatigue (17.4%), poor concentration (13.2%), irritability (11.9%), depressive mood (8.9%), and obsessions (0.1%). There were no reports of phobia or depersonalisation was found in the past week. For Manifest abnormalities, the rates of anxious/tense/agitated were the highest (24.7%), followed by hypochondriasis (excessive concern over bodily functions) (11.7%), depressed (8.3%), depressive thoughts (6.5%), slow (0.2%), and histrionic (0.2%). The last two were very rare. One of them (slow) suffered from severe depression, and the other (histrionic) had such personality trait.

The coexistence of both anxiety and depression among neurotic patients and community cases, as well as the considerable variation on diagnostic criteria for anxiety and depressive neuroses across different community surveys have been discussed in Chapter I. Here, the weighted prevalence of symptoms were calculated according to the

Table 3.13 Weighted proportions at each level of severity for minor psychiatric morbidity by sex among CHQR

OSR level*	Male(%) (n=479)	Female(%) (n=544)	Total(%) (n=1023)
0	49.5	37.3	43.1
1	34.0	30.2	31.9
2	13.4	25.0	19.5
3	2.9	7.5	5.4
4	0.2	0.0	0.1

*0. Not a case: normal, stable individual with or without physical illness;

1. Not a case: subclinical degree of emotional disturbance (includes neurotic personalities without associated affective disturbance);

2. Psychiatric case of mild degree: the psychiatric disturbance is just clinically significant;

3. Psychiatric case of moderate degree;

4. Psychiatric case of marked degree.

Table 3.14 Weighted prevalence of symptoms among CHQR with minor psychiatric morbidity by sex

	Male(%) (n=479)	Female(%) (n=544)	Total(%) (n=1023)
Reported symptoms			
Somatic symptoms	19.6	37.1	28.8
Fatigue	11.9	22.4	17.4
Insomnia	14.4	28.1	21.7
Irritability	7.1	16.0	11.9
Poor concentration	7.7	18.4	13.2
Depressive mood	4.6	12.7	8.9
Anxiety	17.5	34.0	26.1
Phobias	0.0	0.0	0.0
Obsessions	0.2	0.0	0.1
Depersonalisation	0.0	0.0	0.0
Manifest abnormalities			
Slow, lacking spontaneity	0.2	0.2	0.2
Suspicious, defensive	0.0	0.0	0.0
Histrionic	0.0	0.4	0.2
Depression	4.2	11.9	8.3
Anxious/tense/agitated	16.5	32.2	24.7
Hypochondriasis	9.4	13.8	11.7
Depressive thoughts	2.5	9.9	6.5
Depression only	0.2	0.6	0.4
Anxiety only	12.1	19.7	16.0
Depression & Anxiety	4.2	11.9	8.3

existence of anxiety or depression alone, or both of them (mixed state). It was revealed that cases with anxiety had the highest rates in both sexes. The rates for cases with mixed state were rather high, especially among females. Cases with depression only were obviously rare.

b) Patterns of symptoms among cases

There were a total of 202 cases with minor psychiatric morbidity derived from the second stage clinical assessment. They included 176 true positives and 26 false negatives according to their CHQ status. Comparisons of these two groups on both sociodemographic and clinical variables showed no significant difference on any item (see Tables 3.15, 3.16 and Figure 3.1). Therefore, they were combined into one group in the following analysis.

Table 3.17 shows the distribution of individual and combined symptoms among cases of both sexes. Anxiety was found to be the most prevalent among Reported symptoms for both sexes (97.0% in males and 97.1% in females), followed by somatic symptoms (74.2% in males and 88.2% in females). Sleep disturbance, fatigue, irritability, and poor concentration were reported by 40 - 60% of all cases. Depressive mood was reported by 44.9% of female and only 30.3% of male cases, obviously lower than the frequencies of anxiety. Female cases had higher proportion than males for the majority of Reported symptoms except anxiety and obsessions. Among Manifest abnormalities (the psychiatrist's objective judgment), the ratio between anxiety and depression was the same as that in Reported symptoms for both sexes (2-3:1). Nearly half of the cases manifested excessive concern over bodily functions and males had slightly higher rate than females.

When the distribution of anxiety or depression alone, or mixed

Table 3.15 Comparison between true positives and false negatives on sociodemographic distributions

	True(+) (n 176)	False(-) (n 26)	Chi-square test
Community			
Yenpu	60	13	X^2 2.57
Chishan	59	6	df 2
Kaohsiung	57	7	N.S.
Age			
15 - 34	66	8	X^2 0.73
35 - 54	60	11	df 2
55+	50	7	N.S.
Sex			
Male	59	7	X^2 0.45
Female	117	19	df 1 N.S.
S.E.S.			
Upper	12	2	X^2 1.45
Middle	88	16	df 2
Lower	76	8	N.S.
Education			
Illiterate	64	10	
Elementary	51	7	X^2 0.23
High school	51	8	df 3
College & above	10	1	N.S.
Marital status			
Single	36	3	X^2 1.21
Married	117	19	df 2
Others	23	4	N.S.

Table 3.16 Comparison between true positives and false negatives on clinical conditions

	True(+) (n 176)	False(-) (n 26)	
ICD-9 diagnosis			
Anxiety states (300.0)	94	20	X^2 5.12
Neurotic depression (300.4)	71	5	df 2
Others	11	1	N.S.
Symptom distribution			
Anxiety only	102	21	X^2 4.04
Depression only	4	0	df 2
Anxiety & Depression	70	5	N.S.
Clinical severity			
OSR = 2	131	23	X^2 2.46
OSR = 3 & 4	45	3	df 1 N.S.
Mean	2.26	2.12	t -1.58
(s.d.)	(0.45)	(0.33)	N.S.

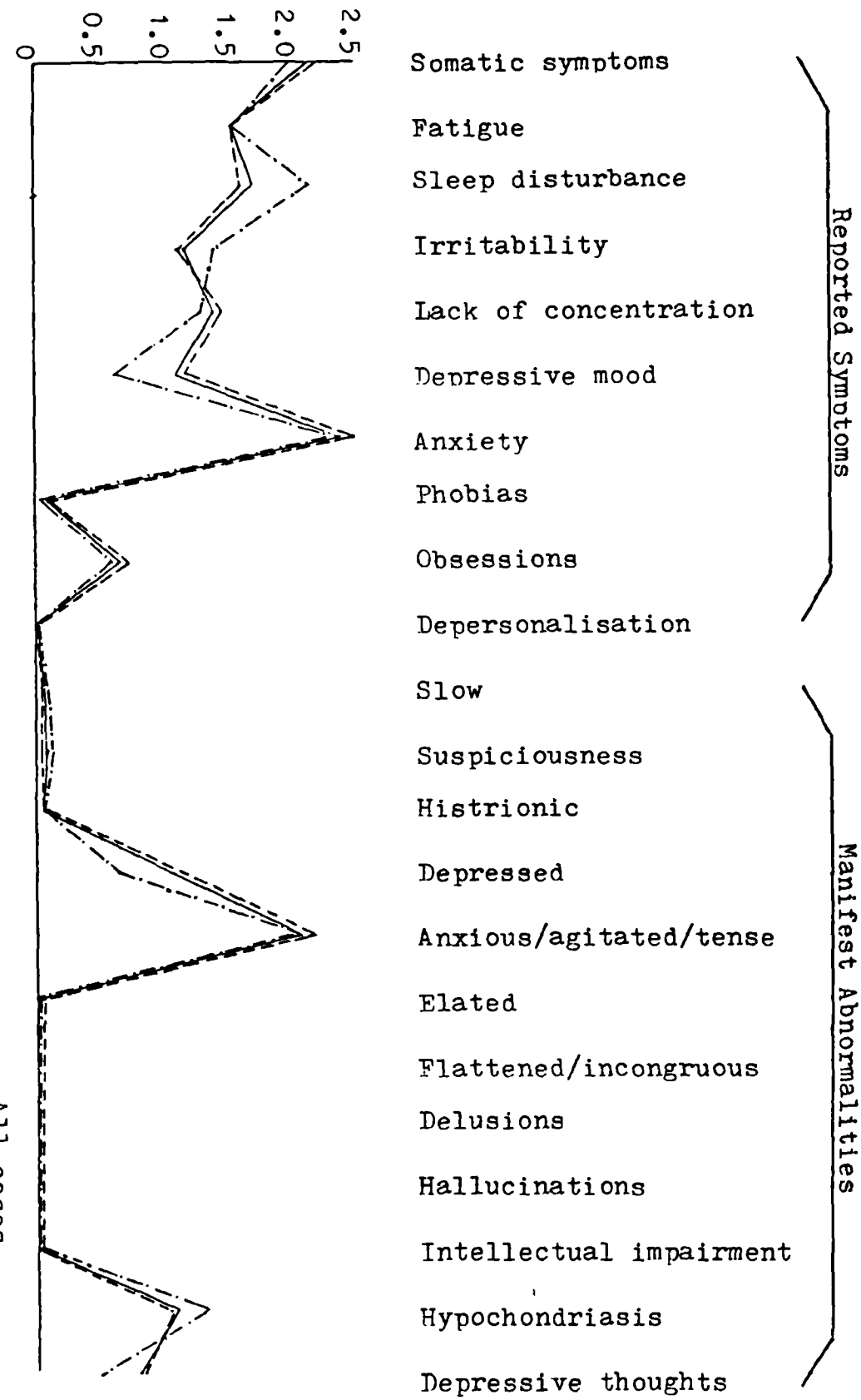

Fig 3.1 The mean score of individual items recorded in the CIS for true positives, false negatives, and all cases

Table 3.17 Distribution of symptoms among cases by sex

	Male (%) (n 66)	Female(%) (n 136)	Total (%) (n 202)
Reported symptoms			
Somatic symptoms	74.2	88.2	83.7
Fatigue	51.5	59.6	56.9
Insomnia	57.6	72.1	67.3
Irritability	36.4	47.1	43.6
Poor concentration	42.4	50.7	48.0
Depressive mood	30.3	44.9	40.1
Anxiety	97.0	97.1	97.0
Phobias	0.0	0.0	0.0
Obsessions	1.5	0.0	0.5
Depersonalisation	0.0	0.0	0.0
Manifest abnormalities			
Slow, lacking spontaneity	1.5	0.7	1.0
Suspicious, defensive	0.0	0.0	0.0
Histrionic	0.0	1.5	1.0
Depression	28.8	44.1	39.1
Anxious/tense/agitated	98.5	97.8	98.0
Hypochondriasis	48.5	41.9	44.1
Depressive thoughts	18.2	33.8	28.7
Depression only	1.5	2.2	2.0
Anxiety only	71.2	55.9	60.9
Depression & Anxiety	27.3	41.9	37.1

state was calculated, cases with anxiety alone had the highest proportion for both sexes and occupied nearly two thirds of all cases. Those with mixed state occupied one third of all cases and was more frequent in female cases.

Table 3.18 shows the comparison between male and female cases on the mean scores of individual items of CIS rating. For Reported symptoms, female cases were significantly severer than males on somatic symptoms, sleep disturbance, irritability, and phobias, whereas the reverse was true on obsessions. For Manifest abnormalities, depression and depressive thoughts were significantly severer in female than in male cases. Fig. 3.2 illustrates the mean scores of individual items on the CIS for male, female, and total cases.

Although somatic symptoms were rather prevalent among all CHQR and cases, none of the cases was found to report or manifest solely somatic symptoms without anxiety or depression.

c) Manifestation of symptoms

Somatic symptoms and somatic concern

The general health inventory conducted by the research assistant in the beginning of the field survey enabled the investigator to check thoroughly each physical complaint made by the respondents for any possible organic lesion and psychological contribution. All the somatic symptoms documented in the Western literature were also found among the Chinese respondents in this survey. However, the expression of these symptoms was vividly colored by the Chinese culture and linked with varied degrees of somatic concern. For instance, many respondents reported having "shin-chin-shui-jo" which means "weakness of the nerves" in Chinese. When this complaint was further probed

Table 3.18 Comparison between sexes on mean scores of Reported symptoms and Manifest abnormalities among cases

Items	Male (n 66) Mean (s.d.)	Female (n 136) Mean (s.d.)	t value (2-tail Prob.)
Reported symptoms			
Somatic symptoms	1.91 (1.12)	2.26 (0.98)	-2.26 (P < .03)
Fatigue	1.48 (1.10)	1.62 (1.04)	-0.84 (N.S.)
Sleep disturbance	1.47 (1.15)	1.84 (1.24)	-2.03 (P < .05)
Irritability	0.95 (0.95)	1.27 (0.97)	-2.20 (P < .03)
Lack of concentration	1.21 (1.02)	1.48 (1.01)	-1.75 (N.S.)
Depressed mood	0.94 (0.99)	1.26 (1.17)	-1.90 (N.S.)
Anxiety	2.42 (0.70)	2.54 (0.63)	-1.22 (N.S.)
Phobias	0.02 (0.12)	0.13 (0.33)	-2.60 (P < .01)
Obsessions	0.73 (0.48)	0.58 (0.50)	1.99 (P < .05)
Depersonalisation	0.00 (0.00)	0.01 (0.12)	-
Manifest abnormalities			
Slow	0.06 (0.30)	0.06 (0.27)	0.04 (N.S.)
Suspiciousness	0.06 (0.24)	0.07 (0.25)	-0.15 (N.S.)
Histrionic	0.00 (0.00)	0.04 (0.27)	-
Depressed	0.88 (0.92)	1.20 (1.02)	-2.16 (P < .05)
Anxious/agitated/tense	2.18 (0.43)	2.19 (0.45)	-0.14 (N.S.)
Elated	-	-	-
Flattened/incongruent	-	-	-
Delusions	-	-	-
Hallucinations	-	-	-
Intellectual Impairment	-	-	-
Hypochondriasis	1.17 (0.89)	1.13 (0.89)	0.26 (N.S.)
Depressive thoughts	0.61 (0.78)	0.88 (0.90)	-2.13 (P < .04)

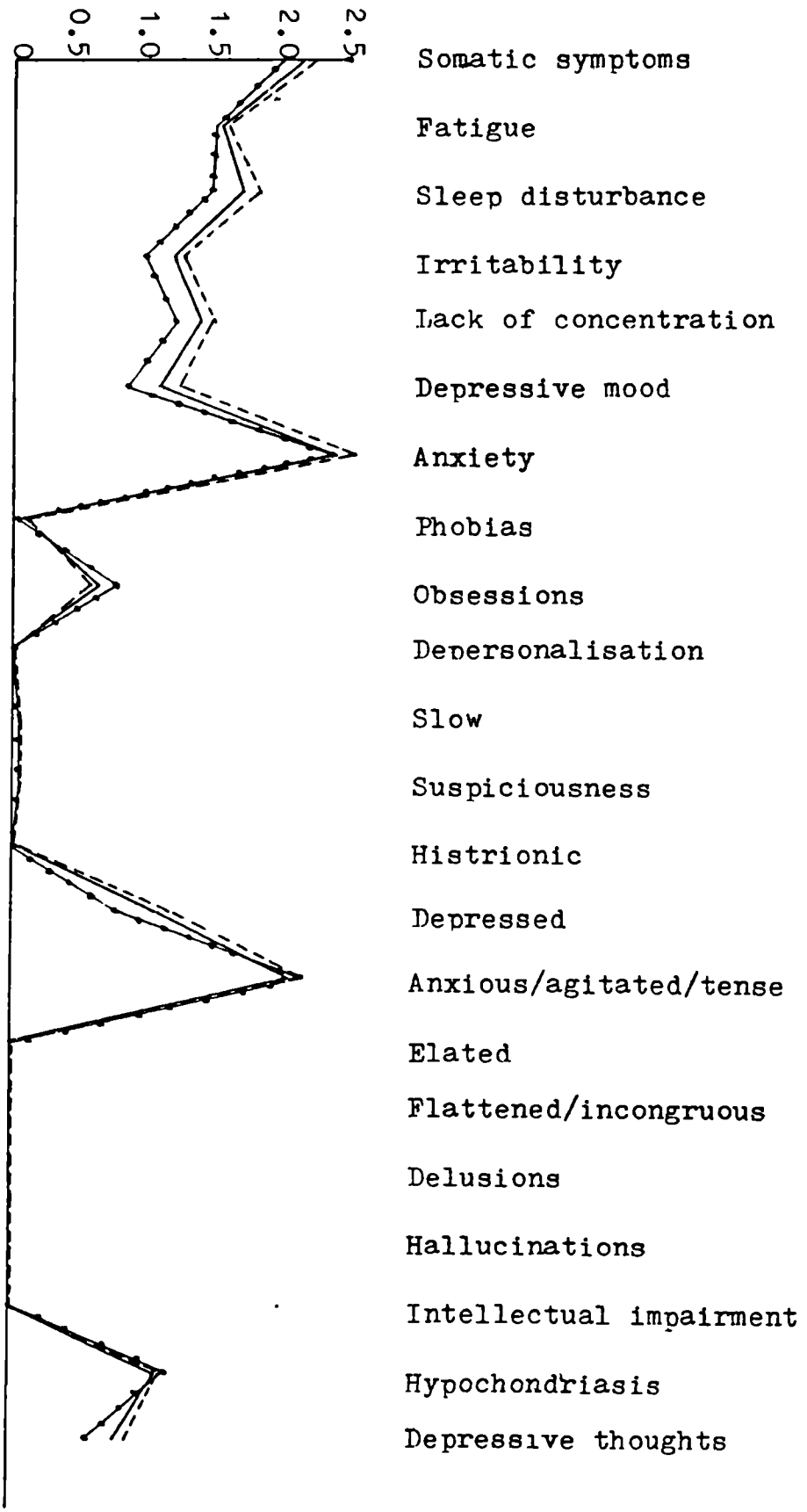

Fig 3.2 The mean score of individual items recorded in the CIS for both sexes among cases

(the questions are: Can you tell me what is it all about?/What do you mean by that?), the respondents would refer to any of the follows: headache, dizziness, poor memory, sleep disturbance, dreams, and fatigue. Many expressions of somatic symptoms used by the respondents were based on a traditional Chinese medical concept of weakness/ insufficiency or over-strong/over-hot of certain internal organs. Thus, "weakness of the heart" could mean palpitation or respiratory difficulty, "insufficiency of kidney" (shen-k'uei) means undue fatigue or sexual dysfunction, and "huo-chi-Da" (a big internal fire) or "gan-huo-wang" (strong liver fire) means dryness/bitterness of mouth or irritability. A careful inquiry was needed to ensure what the respondent actually meant.

An excessive concern over bodily function reported by many respondents was found to be associated with both a lack of modern medical knowledge and the misleading of newspaper's advertisement or physician's explanation. For examples, dizziness causes a concern of being anemic, and headache is linked with the worry of having brain tumor, or hypertension, or sclerotic change of blood vessel, or denseness of the blood. Often, most of these explanations, given by physicians, were followed by various laboratory examinations suggested (most of them were believed to be unnecessary). Some of the somatic concerns have been influenced by the currently prevalent disease, such as hepatitis. Thus, many respondents with undue tiredness were worrying about having hepatitis. A number of cases were frequently visiting doctors and worrying about having some incurable disease. Some of them were highly likely to have received unnecessary operation(s) since there were no necessary laboratory tests reported to have been performed before the operation.

There were 12 respondents who had ever visited the psychiatric

clinic, and half of them were cases during the investigation period. All of the 6 cases reported that they had "shin-chin-shui-jo" and the reasons of seeing psychiatrist were as follows: headache and/or dizziness (3), headache and insomnia (6), insomnia and/or poor memory (3). All of them were found to have somatic concern and 10 of them reported somatic symptoms. The case without somatic symptom was the only one who did not seek any help in the past week because her sleep disturbance was less severe for the time being though her anxiety symptom was still evident.

None of the 6 cases voluntarily reported psychological symptoms to the research assistant on the general health inventory. However, symptoms of anxiety and/or depression were found by the clinical assessment. It was quite obvious that none of them regarded anxiety or depression as symptoms of illness. Therefore, it was very likely that psychological symptoms would not be reported to the psychiatrist they visited unless these symptoms had been properly inquired.

Insomnia, irritability, and poor concentration

A sleep with dreams (not necessarily nightmares) was perceived and complained about by many respondents to be bad and insufficient. Irritability was described as "chia-Yia"/"Gau-Hsien-De" (bad temper)/ "huan" (southern Fukien dialect), or "huo-chi-Da", or "everything incurs dislike/is an eye sore". Many respondents with irritability said that they have tried very hard to inhibit from bursting out of temper. Many of them admitted an increase of bad temper towards their spouse or children. The term used by some respondents to express poor concentration means distractability.

Depressive mood and thoughts

A number of cases with depression reported poor appetite and weight loss. They used "yue-murn"(Mandarin), "tightness of the heart", or "low spirit" to express a depressive mood and often sighed with bitterness. They often reported a lack of initiative in daily activities or work. The general impression is that most of the cases would not give up working (mainly in men) or housekeeping (in women) unless they were terribly depressed. Anxiety usually did not stop them from carrying out these tasks. However, they would reported that they were doing these duties reluctantly with great efforts, or less efficiently. Many of them thought of death in the way like "I would rather die if it is not for my children/parents...(but not spouse)/It is senseless to be a man (woman)".

It was interesting to find that many cases, particularly females, expressed their depressive thoughts by referring to a predestined hard lot. They attributed their life stress, such as the death of their family members, or having no son, or having unfilial child/daughter-in-law, or having married to the wrong man, to an inherited misfortune or having been born in a poor environment. Many of them wept out when such issue was touched.

Unlike their Western counterparts, the depressives found in this survey often denied that they had guilty feelings (in the strict sense of the word), which was often linked with criminality by them. Instead of this, they would express their depressive thoughts by either self-blame or shame reaction. The male depressives often blamed themselves for poor ability, performance, or achievement in various life domains (such as low salary, poor school records, being unable to get married, being old and useless, and so forth). Some depressives would feel "regretful" for what they had done (e.g.,

commitment of a crime or abortion). Others felt that they owed something to their family or friends (e.g. having cancerous disease and being looked after by family members). Sometimes self-blame was implicitly linked with a sense of inferiority (which was often expressed as "can not compare with others").

The feeling of shame, rather than guilt, was also frequently expressed in depressed cases. Many felt ashamed of not doing well at school, or not being able to get married over thirties, or having a daughter-in-law or wife run away from home, or being out of job and looked after by wife, or having a delinquent son, and so forth. Sometimes shame and self-blame came together. A young student would blame himself for, and also felt ashamed of his poor school performance. Cases like this generally denied of guilty feeling and would presumably be judged as lacking depressive thought in ordinary clinical setting where psychiatrists often directly inquired about the presence of guilty feeling. In fact, the concept of guilty feeling as a kind of depressive thought for most psychiatrists in Taiwan was learnt from Western psychiatry.

Anxiety/tension/agitation

Although some anxious cases could understand and admit that they felt "tense", many denied because of a misconception about the word "tension", which was perceived as "panic" by the latter. For instance, a middle-aged married man manifested psychomotor agitation (being restless with tremor of hands) yet denied of feeling "tense". When asked about whether he felt unable to relax (Fung-ching-song), he immediately admitted and complained of having been rather distressed by such discomfort.

Many cases reported uneasiness (huan, Chia-Yia), nervousness,

apprehension, insecurity, and worried that something bad was going to happen. The last two questions of anxiety on CIS with some modification (Do you find yourself worrying more than you need about trivialities and can not stop it?/Have you been very upset and unable to relax yourself by worries in the past week?) were found to be very sensitive in assessing anxiety. A typical process of symptom formation was started by worrying about life event/problems of oneself or members of the family (That things would not be carried out well). Such worrying was then followed by being more and more tense with subsequent development of somatic symptoms, sleep disturbance, poor concentration, and so forth. Then they often visited general practitioner and were told to have "shen-chin-shui-jo" which then became one of the main fixed subjects to be worried about. Such a worry often intensified the anxiety symptom and a vicious circle was often thus established.

Phobia, obsession, and depersonalisation

These symptoms were very rare, a finding in accordance with hospital practice and most Western surveys. Depersonalisation was mainly reported by some severe psychotic depressive patients or schizophrenics in clinical experience. Whether this item is suitable for community survey of minor psychiatric morbidity seems merit further exploration. The same might be true for items like slow, suspicious, and histrionic. The latter two seem more related to personality problem rather than psychological symptoms.

TESTING HYPOTHESIS 1

The basic symptoms found among cases with minor psychiatric morbidity in this study were clearly similar to those found in Western community surveys. The patterns of symptoms in many cases were

atypical as compared with neurotic patients commonly seen in psychiatric clinics. They were observed to manifest a mixture of symptoms including anxiety, depression, irritability, poor memory/ concentration, somatic symptoms and somatic concern, fatigue, insomnia and so forth. The severity of these symptoms were considerably milder than patients in many cases and the currently available diagnostic systems were unsuitable for them. These findings were similar to what Shepherd and his colleagues have observed from their general practice surveys (see chapter I, p.19).

The patterns of symptoms of the present cases were somewhat different from those found in some Western surveys. In particular, anxiety, instead of depression, was found to be the most prevalent symptom among cases of both sexes. The notion of somatisation among Chinese neurotic patients was not supported in this study since, none of the cases only manifest somatic symptoms without anxiety or depression.

It can be seen that the manifestation of symptoms among cases in this study are considerably different from that found in Western surveys. Such differences are derived from the characteristic traditional Chinese medical concept and psycholinguistic expressions of emotional distress among Chinese people.

Overall, therefore, the findings on symptomatology provided support for hypothesis 1, though not based upon the theoretical premise that somatisation is the characteristic feature of the Chinese neurotics.

SOCIO-CULTURAL FACTORS AND MINOR PSYCHIATRIC MORBIDITY

The relationships between minor psychiatric morbidity and various socio-cultural factors among the respondents were then examined on two

psychiatric measures as the dependent variables: the CIS assessment and the CHQ status. The 489 respondents who received the second stage CIS assessment (CISR) were classified into case (N=202) and noncase (N=287) groups. The 1023 respondents who completed the CHQ (CHQR) were classified into CHQ(+) (N=216) and CHQ(-) (N=807) groups. There were three sets of independent variables: (1) the sociodemographic variables (including age, sex, marital status, socioeconomic status, employment status, and community); (2) the socio-environmental risk factors (including poor marital relationship, job dissatisfaction, housekeeping, and care of young children); and (3) psychosocial stress preceded the onset of minor psychiatric morbidity.

The association between each of the sociodemographic variables and minor psychiatric morbidity was first assessed, and the independent and joint (interactive) effects of them were examined by means of linear logistic modelling. Then, the association between each of the social risk factors, psychosocial stress, and disorder was assessed. The risk of morbidity for the significant risk factors and stress was adjusted by demographic variables for the testing of hypotheses.

INDIVIDUAL EFFECTS OF SIX SOCIODEMOGRAPHIC VARIABLES

a) Age and sex

Table 3.19 shows the age and sex distribution of CISR within case and noncase groups in three communities. No significant differences on age distribution between case and noncase groups could be found among male CISR in three communities. However, the proportion of female CISR over 35 years of age among the case group was consistently higher than that among the noncase group in all three communities. The estimated relative risk (odds ratio) for age (divided into two

Table 3.19 Relation of CIS status to age and sex distribution among CISR in three communities

Age	Yenpu N	Yenpu C	Chishan N	Chishan C	Kaohsiung N	Kaohsiung C	Total N	Total C
Male								
15 - 24	19	7	8	0	15	5	42	12
25 - 34	8	5	14	5	11	7	33	17
35 - 44	8	1	7	5	14	2	29	8
45 - 54	10	3	10	3	4	5	24	11
55 - 64	6	3	4	3	7	3	17	9
65^{+}	3	5	1	2	3	2	7	9
Total	54	24^{+}	44	18^{+}	54	24^{+}	152	66^{+}
Female								
15 - 24	16	5	17	6	11	6	44	17
25 - 34	12	10	13	8	18	10	43	28
35 - 44	4	5	5	13	5	6	14	24
45 - 54	6	14	6	7	4	7	16	28
55 - 64	2	8	3	5	3	6	8	19
65^{+}	1	7	4	8	5	5	10	20
Total	41	49**	48	47*	46	40^{+}	135	136***

For age difference:

$^{+}$N.S. *P < .05 **P < .01 ***P < .001

For sex difference:

Yenpu, X^2 9.53 df 1 P < .01

Chishan, X^2 6.46 df 1 P < .02

Kaohsiung, X^2 4.26 df 1 P < .05

Total, X^2 19.75 df 1 P < .001

groups by 35) showed the same trend (Table 3.33). Such a tendency reached statistical significance in both Yenpu and Chishan, but not in Kaohsiung. The lack of significant association between the distribution of age and minor psychiatric morbidity in males was again found when the CHQ status was used as the morbidity index (Table 3.20). For female CHQR, the distribution of CHQ(+) within each of the age groups was somewhat inconsistent across three communities. In Yenpu and Kaohsiung, there was an increase of CHQ(+) proportion from 15-24 to 25-34 subgroup, then, after a decrease in 35-44 subgroup, such proportion increased again with the increase of age. In Chishan, however, two peaks were found in 35-44 and 65+ subgroups. Statistical significance was mainly observed in Yenpu.

The significant association between age and morbidity (both CIS and CHQ status) was found among both total female CISR and CHQR, and was absent among both total male CISR and CHQR. Such a result indicated that there was probably a joint (interactive) effect between age and sex on morbidity.

With regard to sex distribution, the proportion of female CISR among the case group was found to be significantly higher than that of male CISR in all three communities (Table 3.19). The odds ratios were 2.7, 2.4, and 2.0 respectively (Table 3.33). The proportion of CHQ(+) among the female CHQR also tended to be higher than that among the male CHQR in three communities, but statistical significance was only observed in Yenpu (Table 3.20). The significant sex difference in morbidity was evident among both total CISR and CHQR.

b) Socioeconomic status (S.E.S.)

The distribution of S.E.S. among both case and noncase groups is shown in Table 3.21. For both male and female CISR, the tendency of a

Table 3.20 Relation of CHQ status to age and sex distribution in three communities

Age	Yenpu Total	Yenpu CHQ(+)(%)	Chishan Total	Chishan CHQ(+)(%)	Kaohsiung Total	Kaohsiung CHQ(+)(%)	Total Total	Total CHQ(+)(%)
Male								
15 - 24	41	9 (22.0)	19	2 (10.5)	36	6 (16.7)	96	17 (17.7)
25 - 34	35	5 (14.3)	37	10 (27.0)	39	8 (20.5)	111	23 (20.7)
35 - 44	23	1 (4.3)	35	4 (11.4)	30	4 (13.3)	88	9 (10.2)
45 - 54	31	3 (9.7)	33	3 (9.1)	22	3 (13.6)	86	9 (10.5)
55 - 64	19	5 (26.3)	16	3 (18.8)	23	4 (17.4)	58	12 (20.7)
65+	20	4 (20.0)	14	2 (14.3)	3	3 (100.0)	40	9 (22.5)
Total	169	27 (16.0)+	154	24 (15.6)+	156	28 (17.9)+	479	79 (16.5)+
Female								
15 - 24	46	8 (17.4)	40	7 (17.5)	48	7 (14.6)	134	22 (16.4)
25 - 34	36	10 (27.8)	43	8 (18.6)	54	15 (27.8)	133	33 (24.8)
35 - 44	26	3 (11.5)	33	10 (30.3)	27	5 (18.5)	86	18 (20.9)
45 - 54	34	16 (47.1)	30	7 (23.3)	20	6 (30.0)	84	29 (34.5)
55 - 64	15	6 (40.0)	19	4 (21.1)	22	5 (22.7)	56	15 (26.8)
65+	16	8 (50.0)	21	8 (38.1)	14	4 (28.6)	51	20 (39.2)
Total	173	51 (29.5)*	186	44 (23.7)+	185	42 (22.7)+	544	137 (25.2)*

+N.S. *P <.01 Sex difference: Yenpu, X^2 8.85 df 1 P <.01 Chishan, X^2 3.43 df 1 N.S.
Kaohsiung, X^2 1.17 df 1 N.S. Total, X^2 11.55 df 1 P < .001

Table 3.21 Relation of Socioeconomic status (S.E.S.) to CIS status among CISR

S.E.S.	Yenpu N	Yenpu C	Chishan N	Chishan C	Kaohsiung N	Kaohsiung C	Total N	Total C
Male								
Skilled worker	35	11	31	12	47	17	113	40
Non-skilled* worker	19	13	13	6	7	7	39	26
Total	54	24+	44	18+	54	24+	152	66[1]
Female								
Skilled worker	27	27	30	29	42	22	99	78
Non-skilled* worker	14	22	18	18	4	18	36	58
Total	41	49+	48	47+	46	40[3]	135	136[2]

*including semi-skilled and unskilled workers

+N.S. [1]P < .05 [2]P < .01 [3]P < .001

higher proportion of non-skilled workers among the case group was found in Yenpu and Kaohsiung, but not in Chishan (as evident from the odds ratio). Statistical significance was only found among female CISR in Kaohsiung.

Table 3.22 shows the distribution of S.E.S. for both sexes in three communities and its relation with the CHQ status. The tendency for the non-skilled workers to have higher rates of CHQ(+) was again found in Yenpu and Kaohsiung, and not in Chishan. Statistical significance was found among male CHQR in Yenpu and CHQR of both sexes in Kaohsiung.

Although significant difference was observed for both sexes of total CISR and CHQR, the inconsistent relationships between S.E.S. and morbidity in three communities suggested a possibility of interactive effect between S.E.S. and community on minor psychiatric morbidity.

c) Marital status

The relation of marital status to CIS status for both sexes is shown in Table 3.23. The proportion of previously married (others) group (including divorced, separated, and widowed) was very low, particularly among male CISR, in three communities. For male CISR, the risk of morbidity was higher for the currently married than the single (mainly in Chishan and Kaohsiung) as the odds ratio in Table 3.33 indicated. However, no statistical significance could be found between case/noncase groups.

For female CISR, the highest odds ratio was found for the previously married in three communities (Table 3.33). The odds ratio of the married was higher than that of the single in Yenpu and Chishan (and in total female CISR), but not in Kaohsiung where no such difference could be seen. Statistical significance was observed for

Table 3.22 Relation of CHQ status to socioeconomic status

S.E.S.	Yenpu Total	Yenpu CHQ(+)(%)	Chishan Total	Chishan CHQ(+)(%)	Kaohsiung Total	Kaohsiung CHQ(+)(%)	Total Total	Total CHQ(+)(%)
Male								
Skilled worker	107	11(10.3)	113	18(15.9)	133	20(15.0)	353	49(13.9)
Non-skilled* worker	62	16(25.8)	41	6(14.6)	23	8(34.8)	126	30(23.8)
Total	169	27(16.0)[2]	154	24(15.6)[+]	156	28(17.9)[1]	479	79(16.5)[2]
Female								
Skilled worker	109	29(26.6)	121	27(22.3)	154	27(17.5)	384	83(21.6)
Non-skilled* worker	64	22(34.4)	65	17(26.2)	31	15(48.4)	160	54(33.8)
Total	173	51(29.5)[+]	186	44(23.7)[+]	185	42(22.7)[3]	544	137(25.2)[3]

*including semi-skilled & unskilled workers

[+]N.S. [1]P < .05 [2]P < .01 [3]P < .001

Table 3.23 Relation of marital status to CIS status among CISR

Marital status	Yenpu N	Yenpu C	Chishan N	Chishan C	Kaohsiung N	Kaohsiung C	Total N	Total C
Male								
Single	21	8	13	3	24	7	58	18
Married	32	14	31	15	28	16	91	45
Others*	1	2	0	0	2	1	3	3
Total	54	24	44	18	54	24	152	66
Female								
Single	10	3	17	8	11	10	38	21
Married	30	35	30	33	31	23	91	91
Others*	1	11	1	6	4	7	6	24
Total	41	49^{2}	48	47^{1}	46	40	135	136^{3}

*including divorced, separated, and widowed

$^{1}P < .05$ $^{2}P < .01$ $^{3}P < .001$ (Yates' correction if indicated)

Comparison between single/married & Others:

Male: Yenpu, X^2 0.22 df 1 N.S.

Chishan, X^2 0.54 df 1 N.S.

Kaohsiung, X^2 1.62 df 1 N.S.

Female: Yenpu, X^2 6.03 df 1 $P < .02$

Chishan, X^2 4.14 df 1 $P < .05$

Kaohsiung, X^2 0.01 df 1 N.S.

the three marital subgroups in Yenpu, Chishan and total female CISR. When the comparison was performed between single/currently and previously married categories, statistical significance was again found in Yenpu, Chishan, and total female CISR.

Table 3.24 shows the relation of CHQ status to marital status. For male CHQR, there was a consistent trend of lower CHQ(+) rates among the married than the single in three communities, a finding contradicted to that among male CISR. Such trend again failed to reach statistical significance. The proportion of the previously married was again very few. For female CHQR, the trend was similar to that among female CISR except that the distribution of marital status was fairly even in Kaohsiung. Statistical significance was only observed on 3 categories of marital status in Yenpu and total female CHQR. It was absent when marital status was categorised into single/ currently & previously married.

There was a decreasing tendency in the difference of morbidity between three marital categories observed from odds ratio and CHQ(+) proportion from rural to urban communities. Such tendency might imply the decrease of the influence of marital status on minor psychiatric morbidity with the progress of urbanisation.

Table 3.25 shows the distribution of marital status in different age groups for both sexes. It was quite interesting to see that there were very few single men and women over the age of 35. This in fact illustrates a sociocultural characteristic of the Chinese in Taiwan. In view of such a phenomenon and the significant association between age over 35 and morbidity in women, the effects of age, sex, and marital status on morbidity were cross-examined in Table 3.26 and 3.27. It was found that nearly all the previously married were over the age of 35. Only both the currently and previously married women

Table 3.24 Relation of marital status to CHQ status

Marital status	Yenpu Total	Yenpu CHQ(+) (%)	Chishan Total	Chishan CHQ(+) (%)	Kaohsiung Total	Kaohsiung CHQ(+) (%)	Total Total	Total CHQ(+) (%)
Male								
Single	47	10 (21.3)	33	7 (21.2)	58	11 (19.0)	138	28 (20.3)
Married	113	15 (13.3)	117	17 (14.5)	92	16 (17.4)	322	48 (14.9)
Others#	9	2 (22.2)	4	0 (0.0)	6	1 (16.7)	19	3 (15.8)
Total	169	27 (16.0)$^{+}$	154	24 (15.6)$^{+}$	156	28 (17.9)$^{+}$	479	79 (16.5)$^{+}$
Female								
Single	35	7 (20.0)	45	8 (17.8)	54	12 (22.2)	134	27 (20.1)
Married	118	32 (27.1)	125	30 (24.0)	113	26 (23.0)	356	88 (24.7)
Others#	20	12 (60.0)	16	6 (37.5)	18	4 (22.2)	54	22 (40.7)
Total	173	51 (29.5)**	186	44 (23.7)$^{+}$	185	42 (22.7)$^{+}$	544	137 (25.2)*

#including divorced, separated, and widowed

$^{+}$N.S. *P < .02 **P < .01

Comparison between single/married & others:

Male:	Yenpu,	X^2	1.36	df 1	N.S.	Female:	Yenpu,	X^2	1.90	df 1	N.S.
	Chishan,	X^2	1.01	df 1	N.S.		Chishan,	X^2	1.14	df 1	N.S.
	Kaohsiung,	X^2	0.06	df 1	N.S.		Kaohsiung,	X^2	0.01	df 1	N.S.

Table 3.25 Distribution of marital status among different age groups for both sexes

Age groups	Male		Female	
	Single (%)	Others (%)	Single (%)	Others (%)
15 - 24	95 (68.8)	1 (0.3)	113 (84.3)	20 (4.9)
25 - 34	38 (27.5)	73 (21.4)	17 (12.7)	117 (28.5)
35 - 44	4 (2.9)	84 (24.6)	2 (1.5)	84 (20.5)
45 - 54	0	86 (25.2)	2 (1.5)	82 (20.0)
55 - 64	1 (0.7)	56 (16.4)	0	56 (13.7)
65^{+}	0	41 (12.0)	0	51 (12.4)
Total	138	341	134	410

Table 3.26 Sex, marital status, and minor psychiatric morbidity: adjusted by age factor (CIS measures)

Marital status	Age	Male N	Male C	Odds ratio	Female N	Female C	Odds ratio
Single	< 35	55	18	1.0+	38	20	1.6
	≥ 35	3	0	-	0	1	-
Married	< 35	20	11	1.7	49	24*	1.5
	≥ 35	71	34	1.5	42	67	4.9
Others	< 35	0	0	-	0	1	-
	≥ 35	3	3	3.1	6	23	11.7

+Reference group *P < .001

Comparison between male/female for the single:

< 35, X^2 1.52 df 1 N.S.

Comparison between male/female for the married:

< 35, X^2 0.07 df 1 N.S.

≥ 35, X^2 18.2 df 1 P < .0000

Total, X^2 9.10 df 1 P < .005

Comparison between male/female for the others:

Total, X^2 1.07 df 1 N.S.

Comparison between single/married for < 35 age groups:

Male, X^2 1.27 df 1 N.S.

Female, X^2 0.04 df 1 N.S.

Comparison between married/others for ≥ 35 age groups:

Male, X^2 0.20 df 1 N.S

Female, X^2 3.21 df 1 N.S. (odds ratio 2.4)

Table 3.27 Sex, marital status, and minor psychiatric morbidity: adjusted by age factor (CHQ measures)

Marital status	Age	Male Total	Male CHQ(+) (%)	Female Total	Female CHQ(+) (%)
Single	< 35	133	26 (19.5)	130	26 (20.0)
	≥ 35	5	2 (40.0)	4	1 (25.0)
Married	< 35	71	14 (19.7)+	134	28 (20.9)+
	≥ 35	251	34 (13.5)	222	60 (27.0)
Others	< 35	3	0	3	1
	≥ 35	16	3 (18.8)	51	21 (41.2)

+N.S.

Comparison between male/female for the single:

< 35, X^2 0.00 df 1 N.S.

Comparison between male/female for the married:

< 35, X^2 0.04 df 1 N.S.

≥ 35, X^2 13.4 df 1 P < .0001

Total, X^2 10.2 df 1 P < .002

Comparison between male/female for the others:

≥ 35, X^2 2.66 df 1 N.S. (odds ratio 3.0)

Total, X^2 3.89 df 1 P < .05

Comparison between single/married for < 35 age groups:

Male, X^2 0.00 df 1 N.S.

Female, X^2 0.00 df 1 N.S.

Comparison between single/married for ≥ 35 age groups:

Male, X^2 1.07 df 1 N.S.

Female, X^2 0.23 df 1 N.S.

Comparison between married/others for ≥ 35 age groups:

Male, X^2 0.04 df 1 N.S.

Female, X^2 3.98 df 1 P < .05

of older age had high odds ratios. The association between age over 35 and morbidity was then only found among the currently married female CISR, but was absent among the female CHQR. For the CIS measures, the significant difference between sex and morbidity was only found among the older, currently married. For the CHQ measures, such difference was found both among the older, currently married, as well as among all the previously married. When the association between marital status and morbidity was adjusted by age, no significant difference could be found in men, either between single/ married of younger group, or between married/others of older group on both CIS and CHQ measures. The same was found among women on the CIS measures though the trend indicated a higher risk for the older than the younger in previously married. This trend was found to be significant on the CHQ measures.

The findings therefore indicated that the risk of disorder was similar between the single and the married in younger age groups of both sexes [The rates of CHQ(+) of these four sub-groups were nearly the same]. The highest risk of morbidity was found in the previously married women, followed by the older, currently married of the same sex. It was also found that the majority of the previously married were the widowed (11 in 19 for male and 48 in 54 for female CHQR) and the rest were: 7 separated, 5 divorced, and 2 cohabitating. This might imply that the risk of disorder for the previously married was largely that of the widowed, and that the level of psychosocial stress for widows in rural community was the highest of all. Furthermore, a very high proportion of the widowed, and a very low proportion of the divorced/separated were found among the previously married.(1)

Note (1): According to the census record (Ministry of the Interior, 1986), the divorce rate per 1,000 currently married population in 1984 was similar for both sexes, being 4.9.

d) Employment status

A preponderance of the unemployed in case group was observed for the male CISR in three communities from the odds ratio (Table 3.33). Such tendency only reached statistical significance in total male CISR due to relatively small proportion of the unemployed (Table 3.28). The association of unemployment with caseness was not found among the female CISR from both odds ratio and chi-square test.

In Table 3.29, the rates of CHQ(+) were higher among the male unemployed in three communities, and statistical significance was found in Yenpu & Kaohsiung and in total male CHQR. Such an association was again absent for female CHQR in three communities.

Then, the relationship between employment status and minor psychiatric morbidity was adjusted by schooling/housekeeping and single/currently and previously married categories to reflect the present real situation in Taiwan. For the single CISR, the proportions of the employed and students among the case/noncase groups were very similar for both sexes (Table 3.30). There was a trend for a higher proportion of the unemployed among the case group, which did not reach statistical significance for the size of the unemployed was too small. For the currently & previously married, there was virtually no student. The significant association between unemployment and caseness was found among male CISR, and was absent among female CISR. In fact, the proportion of the employed and the housewives in both case and noncase groups was very similar as evidenced from their odds ratios. The same picture was again observed in Table 3.31 where the CHQ status was used as the morbidity index.

e) Community difference

The odds ratios for minor psychiatric morbidity (CIS status)

Table 3.28 Relation of employment status to CIS status among CISR in three communities

Employment status	Yenpu N	Yenpu C	Chishan N	Chishan C	Kaohsiung N	Kaohsiung C	Total N	Total C
Male								
With job*	50	18	43	15	47	18	140	51
Jobless#	4	6	1	3	7	6	12	15
Total	54	24+	44	18+	54	24+	152	66[1]
Female								
With Job*	17	18	26	22	27	21	70	61
Jobless#	24	31	22	25	19	19	65	75
Total	41	49+	48	47+	46	40+	135	136+

*including student

#including housewives, the unemployed, and the retired

+N.S. (Yates' correction when indicated)

[1] $P < .01$

Table 3.29 Relation of CHQ status to employment status among CHQR in three communities

Employment status	Yenpu Total	Yenpu CHQ(+) (%)	Chishan Total	Chishan CHQ(+) (%)	Kaohsiung Total	Kaohsiung CHQ(+) (%)	Total Total	Total CHQ(+) (%)
Male								
With job*	153	21 (13.7)	140	21 (15.0)	139	20 (14.4)	432	62 (14.4)
Jobless#	16	6 (37.5)	14	3 (21.4)	17	8 (47.1)	47	17 (36.2)
Total	169	27 (16.0)[1]	154	24 (15.6)+	156	28 (17.9)[2]	479	79 (16.5)[3]
Female								
With job*	82	19 (23.2)	96	22 (22.9)	104	25 (24.0)	282	66 (23.4)
Jobless#	91	32 (35.2)	90	22 (24.4)	81	17 (21.0)	262	71 (27.1)
Total	173	51 (29.5)+	186	44 (23.7)+	185	42 (22.7)+	544	137 (25.2)+

*including student

#including housewives, the unemployed, and the retired

+N.S. [1]$P < .05$ [2]$P < .005$ [3]$P < .0001$ (Yates' correction when indicated)

Table 3.30 Relation of CIS status to employment status adjusted by schooling and housekeeping

Employment	Male N	Male C	Male OR**	Female N	Female C	Female OR**
Single						
With job	26	7	1.0#	17	9	1.0#
Jobless	2	3	5.6	2	3	2.8
Schooling	30	8	1.0	19	9	0.9
Total	58	18^{+}		38	21^{+}	
Others*						
With job	84	36	-- 2.8	34	43	1.0#
Jobless/retired	10	12		6	13	1.7
Housekeeping	-	-		57	59	0.8
Total	94	48^{1}		97	115^{+}	

*including currently and previously married

**Odds ratio

#reference group

$^{+}$N.S. $^{1}P < .05$

Table 3.31 Relation of CHQ status to employment status adjusted by schooling and housekeeping

Employment	Male		Female	
	Total	CHQ(+) (%)	Total	CHQ(+) (%)
Single				
With job	68	12 (17.6)	64	12 (18.8)
Jobless	8	4 (50.0)	9	3 (33.3)
Schooling	62	12 (19.4)	61	12 (19.7)
Total	138	28 (20.3)$^{+}$	134	27 (20.1)$^{+}$
Others#				
With job	302	38 (12.6)	157	42 (26.8)
Jobless/retired	39	13 (33.3)	38	11 (28.9)
Housekeeping	-	-	215	57 (26.5)
Total	341	51 (15.0)*	410	110 (26.8)$^{+}$

#including currently and previously married

$^{+}$N.S. *P < .001

between Yenpu and Chishan, as well as between Yenpu and Kaohsiung were found to be rather similar for both sexes (Table 3.33). In Table 3.32, the rates of CHQ(+) in three communities were very similar for both sexes. Although there was a weak tendency for females in Yenpu to have both higher odds ratio and rate of CHQ(+) than those of the other two communities, such trend did not reach statistical significance on chi-square test. On the whole, no community difference could be found either for CIS status or on CHQ(+)/CHQ(-) distribution.

Summary of sociodemographic variables

The individual effect of each of the six sociodemographic variables, having been analysed by simple statistical tests, can be summarised as follows:

(1) A significant association between age over 35 and a higher minor psychiatric morbidity was found among females, mainly in rural and suburban communities.

(2) The female preponderance of minor psychiatric morbidity was found in all three communities.

(3) A significant association between lower S.E.S. and higher morbidity was found for both sexes, mainly in urban and, less obvious, in rural communities. No such association could be found in suburban community.

(4) Unemployment was found to be significantly associated with higher morbidity among males (particularly the currently & previously married), mainly in rural and urban communities. No such association could be found among females.

(5) No significant association between marital status and morbidity could be found among males, with or without an adjustment of

Table 3.32 Community difference of the risk of minor psychiatric morbidity by sex

Community	CIS status		CHQ status	
	Noncase	Case	Total	CHQ(+) (%)
Male				
Yenpu	54	24	169	27 (16.0)
Chishan	44	18	154	24 (15.6)
Kaohsiung	54	24	156	28 (17.9)
Total	152	66+	479	79 (16.5)+
Female				
Yenpu	41	49	173	51 (29.5)
Chishan	48	47	186	44 (23.7)
Kaohsiung	46	40	185	42 (22.7)
Total	135	136+	544	137 (25.2)+

+N.S.

Table 3.33 Demographic factors and the risk of minor psychiatric morbidity: a list of odds ratios among CISR

Variable		Comparison	Yenpu	Chishan	Kaohsiung	Total
Age	Male		1.0	2.6	0.9	1.2
	Female	< 35 vs ≥ 35	4.9	3.9	2.6	3.7
	Total		2.3	3.2	1.6	2.2
Sex		F vs M	2.7	2.4	2.0	2.3
S.E.S.	Male		2.2	1.2	2.8	1.9
	Female	Non-skilled vs Skilled	1.6	1.0	8.6	2.0
	Total		1.7	1.2	5.2	2.0
Marital status	Male	M vs S	1.2	2.1	2.0	1.6
	Female	M vs S*	3.9	2.3	0.8	1.8
		O vs S	36.7	12.8	1.9	7.2
	Total	M vs S	2.2	2.2	1.7	1.8
		O vs S	18.3	16.4	2.8	7.4
Job status	Male		4.2	8.6**	2.2	3.4
	Female	Unemployed vs Employed	1.2	1.3	1.3	1.3
	Total		2.5	2.3	1.8	2.2
Community	Male	C vs Y*	-	-	-	0.9
		K vs Y	-	-	-	1.0
	Female	C vs Y	-	-	-	0.8
		K vs Y	-	-	-	0.7
	Total	C vs Y	-	-	-	0.9
		K vs Y	-	-	-	0.8

S: single M: currently married O: previously married

Y: Yenpu C: Chishan K: Kaohsiung *reference groups

**Sample size is too small for the unemployed (n 4)

age. Among women, a significantly higher morbidity was found among the currently married over the age of 35 and the previously married, mainly in rural and (less obvious) suburban communities. The (older) previously married women tended to have the highest risk of disorder. A tendency of declination for the difference of morbidity between differential marital status among females was observed from rural to urban transition.

(6) There was no significant difference of total morbidity between three communities for both sexes.

The individual effects of these six sociodemographic variables were likely to be confounded by, or interacted with each other. Table 3.34 is an illustration of how they themselves were significantly associated. It is therefore necessary to examine as far as possible how independent these individual effects are, and what interaction their joint effects consisted of.

JOINT EFFECTS OF SIX SOCIODEMOGRAPHIC VARIABLES

The independent and joint (interactive) effects of all six sociodemographic variables were investigated by means of linear modelling to find the model of best fit. These variables share the same property of being objective measures (The other two sets of risk factors more or less involve subjective feelings or experiences of the respondents).

Linear logistic model was fitted first to the data with the proportion of cases (transformed to its logit) as the dependent variable. Then, another model was fitted to the data with the proportion of CHQ-positive scorers. Main effects, two-way and three-way interactions were investigated and statistical significance was assessed by the difference in scaled deviance (G square). The

Table 3.34 Association between six sociodemographic variables (Chi-square value) among all CHQ respondents

	Sex	Community	Marital status	Employment status	S.E.S.
Age	3.52 (df 1)	8.32 (df 2)[1]	377.85 (df 1)[5]	67.52 (df 1)[5]	33.64 (df 1)[5]
S.E.S.	1.22 (df 1)	40.03 (df 2)[5]	9.02 (df 1)[3]	12.84 (df 1)[4]	
Employment status	177.70 (df 1)[5]	0.56 (df 2)	100.86 (df 1)[5]		
Marital* status	2.28 (df 1)	10.35 (df 2)[2]			
Community	1.40 (df 2)				

[1] $P < .02$ [2] $P < .01$ [3] $P < .005$ [4] $P < .0005$ [5] $P < .0000$

*classified into never married and married (currently and previously) groups

results of these two modelling were compared to assess their consistency. Since the CIS data was judged to be the standard measure of the dependent variable, an a prior decision was taken to view the result derived from the CIS modelling to be more accurate than that of the CHQ modelling.

a) Linear modelling with CIS data

The model of best fit (deviance 21.38, df 20) was:

$$\ln P/1-P = GM + AGEi + SEXj + SESk + EMPl + AGEi*SEXj + SEXj*EMPl$$

where

P is the proportion of cases;

GM is a constant (the "grand mean");

AGEi is the effect of being in the ith age group, where i takes the value 1 for ages <35 years, and 2 for ages ≥35 years;

SEXj is the effect of being of the jth sex, where j takes the value 1 for men and 2 for women;

SESk is the effect of being in the kth SES category, where k takes the value 1 for SES 1, 2, 3, & 4 (i.e. skilled workers and above), and 2 for SES 5 & 6 (i.e. semi- & unskilled workers);

EMPl is the effect of being in the lth employment status group, where l takes the value 1 for the employed and 2 for the unemployed.

Details of the model are illustrated in Table 3.35 where the estimated values of the parameters together with their standard errors are displayed, as well as the differences in deviance (G square) which resulted when each effect was removed from the model.

It can be seen that both age and sex and sex and employment status exert interactive effects on the proportion of cases, whereas socioeconomic status exerted an independent effect.

b) Linear modelling with CHQ data

Table 3.35 Joint effects of the six sociodemographic variables on minor psychiatric morbidity by CIS status: linear logistic model

Parameter	Estimate	S.E.	Difference in deviance	df	P
GM	-1.191	.2337	-	-	-
AGE(2)	.0249	.3088	7.59	1	< .01
SEX(2)	.5120	.3037	13.30	1	< .001
SES(2)	.5486	.2108	6.66	1	< .01
EMP(2)	1.1780	.4282	0.61	1	N.S.
AGE(2)*SEX(2)	1.3750	.4261	10.57	1	< .005
SEX(2)*EMP(2)	-1.6050	.5203	9.65	1	< .005
Scale parameter taken as		1.000			

[1]Marital status was categorised into two groups: never married (MAR1), currently & previously married (MAR2), and has no effect by the model.

[2]Coefficient of multiple determination 75.01%

[3]AGE(1), SEX(1), SES(1), EMP(1), MAR(1), and COM(1) were all constrained to be zero by the model.

The model of best fit (deviance 77.82, df 63) was:

$$\ln P/1-P = GM + AGEi + SEXj + SESk + EMPl + COMm + AGEi*SEXj + SEXj*EMPl + SESk*COMm$$

where each of the items represented the same effect as that of the first model, except that:

COMm is the effect of being in the mth community category, where m takes the value 1 for rural, 2 for suburban, and 3 for urban communities.

Table 3.36 shows the details of the model. It was found that age and sex, sex and employment status, and socioeconomic status and community exerted interactive effects on the proportion of cases.

c) Interpretation of the models

It is clear that both the CIS and the CHQ models found two similar interactive effects between age and sex, as well as between sex and employment status. However, while the CIS model found an independent effect of socioeconomic status, an interactive effect between socioeconomic status and community was found by the CHQ model. These will now be considered.

(1) An interactive effect of age and sex

The expected odds ratio and proportion of cases or CHQ positives were calculated and shown in Table 3.37. It can be seen that both models indicated that women with age $\geq$35 are at greater risk for being caseness or CHQ positive than any of the other three age/sex groups, between which there was little difference. The risk of being caseness for women aged $\geq$35 years was nearly two times that of women aged <35 years, and nearly three times that of men among any of the two age groups in the CIS model.

In the CHQ model, the risk for women aged $\geq$35 years was 1.3 times that of women aged <35 years, 1.6 times that of men aged <35 years,

Table 3.36 Joint effects of the six sociodemographic variables on minor psychiatric morbidity by CHQ status: linear logistic model

Parameter	Estimate	S.E.	Difference in deviance	df	P
GM	-1.636	.2350	-	-	-
AGE(2)	- .5544	.2617	0.03	1	N.S.
SEX(2)	.2382	.2469	4.23	1	< .05
EMP(2)	1.269	.3503	4.53	1	< .05
SES(2)	.6235	.2697	12.73	1	< .001
COM(2)	.3779E-01	.2448			
COM(3)	- .1587	.2397	0.75	2	N.S.
AGE(2)*SEX(2)	.9123	.3431	7.11	1	< .01
SEX(2)*EMP(2)	-1.314	.4142	9.65	1	< .005
COM(2)*SES(2)	- .5225	.3967			
COM(3)*SES(2)	.5780	.4207	6.32	2	< .05
Scale parameter taken as		1.000			

[1]Marital status was categorised into two groups: never married (MAR1), currently & previously married (MAR2), and has no effect by the model.

[2]AGE(1), SEX(1), SES(1), EMP(1), MAR(1), and COM(1) were all constrained to be zero by the model.

[3]Coefficient of multiple determination 40.5%.

Table 3.37 The interactive effect of age and sex on minor psychiatric morbidity in CIS and CHQ models

Age	Risk estimates	Male	Female
CIS model			
< 35	Expected OR*	0.30	0.51
	Expected proportion	0.23	0.34
≥ 35	Expected OR*	0.31	2.06
	Expected proportion	0.24	0.67
CHQ model			
< 35	Expected OR*	0.19	0.25
	Expected proportion	0.16	0.20
≥ 35	Expected OR*	0.11	0.35
	Expected proportion	0.10	0.26

*Odds ratio

and 2.6 times that of men aged ≥35 years. The risk of men aged <35 years was higher than that of men aged ≥35 years (being 1.6 times) in the CHQ model, but the risks of these two groups were almost the same in the CIS model. The difference between these two modelling probably indicate something about the effect of age and sex on misclassification of the CHQ screening.

(2) An interactive effect of sex and employment status

This effect was found by both modelling. Table 3.38 shows the expected odds ratio and proportion of cases or CHQ positives. It is clear that unemployed men have the greatest risk for being caseness or CHQ positive of all four sex/employment status groups in both CIS and CHQ modelling. In the CIS modelling, the risk for unemployed men was two times that for employed men and unemployed women, and about 1.5 times that of employed women. The risk for employed women was about 1.4 times that for unemployed women, indicating a higher risk for employed women than that for the unemployed.

In the CHQ modelling, the risk for unemployed men was about two times that for employed or unemployed women, and 2.6 times that for employed men. Contrary to the finding in the CIS modelling, no difference between the risks for employed and unemployed women could be found. Such difference between the two modelling might again due to the effect of sex and employment status on misclassification.

(3) An independent effect of socioeconomic status

This effect was only demonstrated by the CIS model, of which the expected proportions of SES1 (skilled worker and above) and SES2 (semi- and un-skilled workers) were 0.23 and 0.35 respectively, indicating that the risk of being caseness for the respondents of the latter group was higher than that for the former group. The risk for

Table 3.38 The interactive effect of sex and employment status on minor psychiatric morbidity in CIS and CHQ models

Employment	Risk estimates	Male	Female
CIS model			
Employed	Expected OR*	0.30	0.51
	Expected proportion	0.23	0.34
Unemployed	Expected OR*	0.99	0.33
	Expected proportion	0.50	0.25
CHQ model			
Employed	Expected OR*	0.19	0.25
	Expected proportion	0.16	0.20
Unemployed	Expected OR*	0.69	0.24
	Expected proportion	0.41	0.19

*Odds ratio

SES2 was 1.5 times that for SES1.

(4) The interactive effect of socioeconomic status and community

This effect was only found in the CHQ modelling. The difference in scaled deviance (G square) resulting from the removal of SES*COM was 6,32, only just marginally significant at the 5% level. Since no such effect was found in the CIS modelling (which is based on standard morbidity measure), it might occurred by chance. Furthermore, the possibility of any effect of socioeconomic status and community on misclassification of the CHQ screening might also contribute to the difference between the two modelling. It was therefore decided to ignore this effect.

SOCIOENVIRONMENTAL RISK FACTORS

Having assessed the independent and joint effects of socio-demographic variables on minor psychiatric morbidity, the next interest would be to examine the association between various social risk factors, life event stress and morbidity across the significant demographic variables derived from linear modelling.

a) Care of young children

The significant association between care of young children under 15 years of age and minor psychiatric morbidity among women reported in some Western surveys was examined in this study. Table 3.39 shows the result of this investigation based on CIS and CHQ assessment, either among all respondents, or only among the currently and previously married.(1) Significant association between the number of

Note (1): In their tests for this association among Camberwell women, both Brown & Harris (1978) and Bebbington et al. (1981) did not consider the effect of marital status. Since non-married mothers were obviously rare in Taiwan (None in all respondents), it might be relevant to consider this effect in the present analysis.

Table 3.39 Care of children under 15 and the risk of minor psychiatric morbidity adjusted by marital status

Marital status	Sex	No. of children	CIS status N	CIS status C	CIS status OR*	CHQ status Total	CHQ status CHQ(+) (%)
Married#	Male	None	37	26^{+}	1.0**	152	27 (17.8)$^{+}$
		1-2	32	16	0.7	118	19 (16.1)
		$\geq$ 3	25	6	0.3	71	5 (7.0)
	Female	None	46	69^{+}	1.0**	213	66 (31.0)***
		1-2	33	26	0.5	133	24 (18.0)
		$\geq$ 3	18	20	0.7	64	20 (31.3)
All	Male	None	95	44^{+}	1.0**	290	55 (19.0)$^{+}$
		1-2	32	16	1.1	118	19 (16.1)
		$\geq$ 3	25	6	0.5	71	5 (7.0)
	Female	None	84	90^{+}	1.0**	347	93 (26.8)$^{+}$
		1-2	33	26	0.7	133	24 (18.0)
		$\geq$ 3	18	20	1.0	64	20 (31.3)

#including currently and previously married

*Odds ratio

**Reference group

$^{+}$N.S. ***P < .05

young children and disorder was only found in currently and previously married women on CHQ status. However, the CHQ(+) rate among those without children under 15 was similar to that among those with three or more young children, and the lowest risk of morbidity was among those with one or two children under 15 on both CIS and CHQ status. Similar results were observed from the odds ratios.

Since married women without young child or with three or more children presumably were the older in Taiwan, the relationship between the number of child and disorder might be affected by age factor. Hence, the relationship between childcare and disorder were further assessed within different age/sex, sex/socioeconomic status, and sex/ employment status groups in Tables 3.40, 3.41, and 3.42. The confounding effect of age was observed since the risk of morbidity generally tended to be higher in older than younger women irrespective of the number of young children they had. For sex/ SES groups, no significant association between childcare and disorder could be found at all. For sex/employment status groups, only one significant association was found among the employed men. However, the higher risk was again for those without children under 15. On the whole, care of young child was not found to be a significant social risk factor on minor psychiatric morbidity in the present study.

b) Poor marital relationship

Every respondent who was currently married was asked to assess his(her) current marital relationship on a 4-point scale: quite satisfied, somewhat satisfied, somewhat dissatisfied, and quite dissatisfied. Table 3.43 shows the association between marital relationship (dichotomised into satisfied/dissatisfied groups) and minor psychiatric morbidity for the currently married respondents

Table 3.40 Childcare and the risk of minor psychiatric morbidity adjusted by age and sex

Age	Sex	No. of children	CIS status N	CIS status C	CHQ status Total	CHQ status CHQ(+) (%)
< 35	Male	None	55	19+	139	27 (19.4)+
		1-2	13	7	46	10 (21.7)
		≥ 3	7	3	22	3 (13.6)
	Female	None	50	20+	148	28 (18.9)+
		1-2	22	12	74	14 (18.9)
		≥ 3	15	13	45	13 (28.9)
	Total	None	105	39+	287	55 (19.2)+
		1-2	35	19	120	24 (20.0)
		≥ 3	22	16	67	16 (23.9)
≥ 35	Male	None	40	25+	151	28 (18.5)*
		1-2	19	9	72	9 (12.5)
		≥ 3	18	3	49	2 (4.1)
	Female	None	34	70+	199	65 (32.7)+
		1-2	11	14	59	10 (16.9)
		≥ 3	3	7	19	7 (36.8)
	Total	None	74	95*	350	93 (26.6)**
		1-2	30	23	131	19 (14.5)
		≥ 3	21	10	68	9 (13.2)

+N.S. *P < .05 **P < .005

Table 3.41 Childcare and the risk of minor psychiatric morbidity adjusted by sex and employment status

Employment status	Sex	No. of children	CIS status N	CIS status C	CHQ status Total	CHQ status CHQ(+) (%)
Unemployed	Male	None	10	12^{+}	39	14 (35.9)$^{+}$
		1-2	1	1	5	1 (20.0)
		$\geq$ 3	1	2	3	2 (66.7)
	Female	None	35	54^{+}	161	51 (31.7)$^{+}$
		1-2	18	12	66	11 (16.7)
		$\geq$ 3	12	9	35	9 (25.7)
	Total	None	45	66^{+}	200	65 (32.5)*
		1-2	19	13	71	12 (16.9)
		$\geq$ 3	13	11	38	11 (28.9)
Employed	Male	None	85	32^{+}	251	41 (16.3)*
		1-2	31	15	113	18 (15.9)
		$\geq$ 3	24	4	68	3 (4.4)
	Female	None	49	36^{+}	186	42 (22.6)$^{+}$
		1-2	15	14	67	13 (19.4)
		$\geq$ 3	6	11	29	11 (37.9)
	Total	None	134	68^{+}	437	83 (19.0)$^{+}$
		1-2	46	29	180	31 (17.2)
		$\geq$ 3	30	15	97	14 (14.4)

$^{+}$N.S. *P < .05

Table 3.42 Childcare and the risk of minor psychiatric morbidity adjusted by sex and socioeconomic status

S.E.S.	Sex	No. of children	CIS status N	CIS status C	CHQ status Total	CHQ status CHQ(+) (%)
Skilled worker	Male	None	69	27+	176	34 (16.2)+
		1-2	26	10	77	13 (14.4)
		≥ 3	18	3	51	2 (3.8)
	Female	None	63	45+	180	51 (22.1)+
		1-2	25	19	86	18 (17.3)
		≥ 3	11	14	35	14 (28.6)
	Total	None	132	72+	356	85 (19.3)+
		1-2	51	29	163	31 (16.0)
		≥ 3	29	17	86	16 (15.7)
Semi- & unskilled worker	Male	None	59	21+	59	21 (26.3)+
		1-2	22	6	22	6 (21.4)
		≥ 3	15	3	15	3 (16.7)
	Female	None	74	42+	74	42 (36.2)+
		1-2	23	6	23	6 (20.7)
		≥ 3	9	6	9	6 (40.0)
	Total	None	47	62+	133	63 (32.1)+
		1-2	14	13	45	12 (21.1)
		≥ 3	14	9	24	9 (27.3)

+N.S.

Table 3.43 Poor marital relationship and the risk of minor psychiatric morbidity among currently married men and women by age

Sex	Age	Marital relationship	CIS status N	CIS status C	CHQ status Total	CHQ status CHQ(+) (%)
Male	< 35	Satisfied	19	10	68	13 (19.1)
		Dissatisfied	1	1	3	1 (33.3)
		Total	20	11[+]	71	14 (19.7)[+]
	≥ 35	Satisfied	69	31	245	32 (13.1)
		Dissatisfied	2	3	6	2 (33.3)
		Total	71	34[+]	251	34 (13.5)[+]
	Total	Satisfied	88	41	313	45 (14.4)
		Dissatisfied	3	4	9	3 (33.3)
		Total	91	45[+]	322	48 (14.9)[+]
Female	< 35	Satisfied	47	17	124	22 (17.7)
		Dissatisfied	2	7	10	6 (60.0)
		Total	49	24[2]	134	28 (20.9)[2]
	≥ 35	Satisfied	38	47	196	42 (21.4)
		Dissatisfied	4	20	26	17 (65.4)
		Total	42	67[1]	222	59 (26.6)[4]
	Total	Satisfied	85	64	320	64 (20.0)
		Dissatisfied	6	27	36	23 (63.9)
		Total	91	91[3]	356	87 (24.4)[4]

[+]N.S. [1]P < .02 [2]P < .01 [3]P < .001 [4]P < .0000

Comparison between satisfied/dissatisfied of both sexes:

CHQR, X^2 14.6 df 1 P < .0001

Percentage of CHQR with poor marital relationship:
Male 2.8% Female 10.1%

across four sex/age groups. No statistical significance could be found among male groups for such association both on CIS and CHQ status, though the rates of CHQ(+) for those with poor marital relationship was higher than that for those without in both age groups (the proportion of men with marital dissatisfaction was in fact quite small, being only 2.8%). However, such association was found to be quite significant among females of the two age groups on both CIS and CHQ status.

The proportion of CHQR with poor marital relationship was found to be significantly higher in women (10.1%) than men (2.8%). Although the significant association between poor marital relationship and the risk of morbidity was found for both young and older married women, the degree of dissatisfaction was found to be significantly higher for the older than the younger group as examined by t-test in Table 3.44.

c) Job satisfaction

The relationship between job satisfaction and psychiatric assessment for both sexes, with reference to marital status, was investigated among those who were employed. For male CISR, a significant association between job dissatisfaction and being caseness was found among the currently and previously married, but not among the single (Table 3.45). For female CISR, such association was revealed irrespective of their marital status. The same trend was observed on CHQ status (Table 3.46) where the rate of CHQ(+) among those with job dissatisfaction was much higher than that of those who were satisfied with their job.

The association between job dissatisfaction and morbidity was adjusted by sex/socioeconomic status in Table 3.47. Among men,

Table 3.44 Comparison on marital relationship score between different age groups of currently married women

Age group	N	Mean	S.D.	t value	df	P (two-tail)
< 35	73	1.74	0.91	-3.28	180	< .001
≥ 35	109	2.18	0.88			

Rating for marital relationship:

1. quite satisfied;
2. somewhat satisfied;
3. somewhat dissatisfied;
4. quite dissatisfied.

Table 3.45 Relation of job satisfaction to CIS status: adjusted by sex and marital status

Job satisfaction	Single N	Single C	Single OR	Others# N	Others# C	Others# OR	Total N	Total C	Total OR
Male									
Satisfied	15	4		69	22		83	26	
			-- 1.0			-- 2.9			-- 2.0
Dissatisfied	11	3		15	14		26	16	
Total	26	7+		84	36*		109	42+	
Female									
Satisfied	16	4		33	21		49	25	
			--20.0			--34.6			--26.5
Dissatisfied	1	5		1	22		2	27	
Total	17	9*		34	43**		51	52**	

#including currently & previously married

+N.S. *P < .02 **P < .0000 (Yates' correction when indicated)

Table 3.46 Relation of job satisfaction to CHQ status: adjusted by sex and marital status

Job satisfaction	Single Total	Single CHQ(+)(%)	Others* Total	Others* CHQ(+)(%)	Total Total	Total CHQ(+)(%)
Male						
Satisfied	44	5(11.4)	242	24(9.9)	285	29(10.2)
Dissatisfied	24	7(29.2)	60	14(23.3)	83	21(25.3)
Total	68	12(17.6)+	302	38(12.6)[1]	368	50(13.6)[2]
Female						
Satisfied	57	7(12.3)	121	22(18.2)	178	29(16.3)
Dissatisfied	7	5(71.4)	36	20(55.6)	43	25(58.1)
Total	64	12(18.8)[1]	157	42(26.8)[3]	221	54(24.4)[3]

*including currently & previously married

+N.S. [1]P < .01 [2]P < .001 [3]P < .0000
(Yates' correction when indicated)

Table 3.47 Job satisfaction and the risk of minor psychiatric morbidity: adjusted by socioeconomic status and sex

		Male				Female			
	Job	CIS status		CHQ status		CIS status		CHQ status	
S.E.S.	satisfaction	N	C	Total	CHQ(+) (%)	N	C	Total	CHQ(+) (%)
Skilled worker	Satisfied	65	17	218	20 (9.2)	42	21	144	25 (17.4)
	Dissatisfied	18	8	57	14 (24.6)	1	11	19	10 (52.6)
	Total	83	25+	275	34 (12.4)[2]	43	32[3]	163	35 (21.5)[2]
Semi- & unskilled workers	Satisfied	18	9	67	9 (13.4)	7	4	34	4 (11.8)
	Dissatisfied	8	8	26	7 (26.9)	1	16	24	15 (62.5)
	Total	26	17+	93	16 (17.2)+	8	20[1]	58	19 (32.8)[4]

+N.S. [1]P < .005 [2]P < .002 [3]P < .0002 [4]P < .0001

Percentage of women within each S.E.S. groups: Skilled 73.8% (163/221)
Semi- & unskilled 26.2% (58/221)

Percentage of women dissatisfied: Skilled 11.7% (19/163)
Semi- & unskilled 41.4% (24/58)

Percentage of women satisfied: Skilled 88.3% (144/163)
Semi- & unskilled 58.6% (34/58)

significant association was only observed for the higher SES group on CHQ status. Nonetheless, such association was found among women irrespective of their socioeconomic status.

It can be seen that the proportion of women with job was much higher among the higher than the lower SES group (being 73.8% and 26.2% respectively), and the proportion of women who were satisfied with their jobs was significantly higher among the upper than the lower SES group (chi-square value 24.12, df 1, $P < .0000$). However, the proportion of women dissatisfied with their job was significantly higher among the lower than the higher SES group (chi-square value 24.1, df 1, $P < .0000$).

d) Attitude toward housekeeping

Table 3.48 shows the relationship between psychiatric measures and attitude toward housekeeping among currently and previously married women (They took the main responsibility of housekeeping in most of the families in Taiwan). It is interesting to see that the odds ratio equals to 1.0 for CISR, and no significant difference could be found between positive/negative attitude and case/noncase or CHQ(+)/CHQ(-) status. As a matter of fact, the proportion of women with a negative attitude towards housekeeping was rather small.

Summary (socioenvironmental risk factors)

In summary, for the four social risk factors investigated, both care of young children and housekeeping were found to have no association with minor psychiatric morbidity, whereas both poor marital relationship and job dissatisfaction were found to be significantly associated with such morbidity. Poor marital relationship was only significantly associated with morbidity among women, and job dissatisfaction was significantly associated with

Table 3.48 Relation of attitude towards housekeeping to minor psychiatric morbidity among currently and previously married women*

Attitude	CIS status N	C	OR	CHQ status Total	CHQ(+) (%)
Positive**	51	53	-- 1.0	199	51 (25.6)
Negative***	6	6		16	6 (37.5)
Total	57	59+		215	57 (26.5)+

*including the unemployed only

**Those who were willing to do housekeeping.

***Those who were forced to do housekeeping with resentment.

+N.S.

disorder among women and (less obvious) men with family responsibility. The extent of marital dissatisfaction for women over 35 was significantly higher than women under 35.

PSYCHOSOCIAL STRESSORS

The third set of socio-cultural risk factors being correlated with minor psychiatric morbidity in this study were various psychosocial stressors. They were classified into two different kinds. The first kind was acute life event which was reported to occur within six months, either before the onset of illness (case group), or before the field interview (noncase group). The second kind was chronic psychosocial stressor which was reported to exist within six months, either before the onset of illness (case group), or before the field interview (noncase group). Most of the acute life events were able to be dated, whereas all of the chronic psychosocial stressors were by nature unable to be affirmed on the exact time of their onset. In other words, the latter took the way of insiduous onset.

These two kinds of stressors were only investigated in the second stage of case finding. Therefore, only the CISR were included in the analysis of the association between the two kinds of stressors and the risk of minor psychiatric morbidity. Since there was no population norm of the degree of "threat" for common life events and chronic stressors of the Chinese in Taiwan, it was decided to include only those reported by both cases and noncases to be quite stressful in the analysis. Those trivial events or stressors were excluded.

a) Acute life events

The association between case/noncase and the presence/absence of life events was first assessed. The result is shown in Table 3.49.

Table 3.49 Life events and the risk of minor psychiatric morbidity across sociodemographic variables

Demographic variables	groups	Events	Male N	Male C	Female N	Female C
Age	< 35	(-)	59	4^{5}	74	14^{5}
		(+)	16	25	13	31
	≥ 35	(-)	60	12^{5}	35	31^{5}
		(+)	17	25	13	60
Employment status	Jobless	(-)	8	0^{3}	49	32^{4}
		(+)	4	15	16	43
	Working	(-)	111	16^{5}	60	13^{5}
		(+)	29	35	10	48
S.E.S.	Skilled	(-)	91	10^{5}	79	25^{5}
		(+)	22	30	20	53
	Non-skilled	(-)	28	6^{4}	30	20^{5}
		(+)	11	20	6	38
Marital status	Single	(-)	44	3^{5}	32	6^{5}
		(+)	14	15	6	15
	Others*	(-)	75	13^{5}	77	39^{5}
		(+)	19	35	20	76
Community	Yenpu	(-)	43	4^{5}	33	23^{2}
		(+)	11	20	8	26
	Chishan	(-)	33	7^{1}	39	13^{5}
		(+)	11	11	9	34
	Kaohsiung	(-)	43	5^{5}	37	9^{5}
		(+)	11	19	9	31
Total		(-)	119	16^{5}	109	45^{5}
		(+)	33	50	26	91

*including currently & previously married

$^{1}P < .01$ $^{2}P < .002$ $^{3}P < .001$ $^{4}P < .0001$ $^{5}P < .0000$

Highly significant association between the presence of acute life events and caseness was found for both sexes, and remained so after having been adjusted by six sociodemographic variables.

These events were then classified into a number of types according to their nature in various life domains (Table 3.50). For those types encountered by all respondents, both job and financial events was significantly associated with morbidity among men only. Events of physical condition was significantly associated with morbidity in men and women. No significant association could be found between events related to parents, close relatives, interpersonal relationship, environmental changes, legal affairs, and morbidity for both sexes. Most of them were in fact very rare.

For the events encountered with by married CISR only, it can be seen that the risk of morbidity for women were higher than men. These events were all related to the family, including problems of children and spouse, as well as marital relation. Events encountered with by the single CISR related to both school and affection, and only the former was found to be significantly associated with morbidity in young women. The frequency of reporting event of affection was very small among both case and noncase groups.

In general, life events significantly associated with morbidity were different between the two sexes. For men, such events mainly related to job and finance which men's social role usually involved. For women, these events were mainly related to the family. The effect of physical illness/injury on morbidity was significant for both sexes. It is interesting to see that events related to parents and other close relatives, unlike those of children and spouse, were not significantly associated with morbidity for both sexes. Furthermore, events outside the family (such as interpersonal/environmental/legal

Table 3.50 Types of life events and the risk of minor psychiatric morbidity by marital status

Types of events	Absence(-)/ presence(+)	Male N	Male C	Female N	Female C
Single (n 135)					
Affection	(-)	57	18+	38	19+
	(+)	1	1	0	2
Academy	(-)	51	13+	37	15[1]
	(+)	7	5	1	6
Others (n 354)*					
Children's problem	(-)	90	41+	89	86[4]
	(+)	4	7	8	29
Spouse' problem	(-)	92	45+	95	100[2]
	(+)	2	3	2	15
Marital relation	(-)	93	45+	96	105[1]
	(+)	1	3	1	10
All (n 489)					
Job	(-)	147	45[6]	134	129+
	(+)	5	21	1	7
Financial	(-)	151	54[6]	133	130+
	(+)	1	12	2	6
Physical condition	(-)	140	50[3]	130	112[5]
	(+)	12	16	5	24
Parents' problem	(-)	149	63+	129	124+
	(+)	3	3	6	12
Close relatives	(-)	151	65+	134	131+
	(+)	1	1	1	5
Interpersonal	(-)	151	65+	133	135+
	(+)	1	1	2	1
Environmental	(-)	151	64+	134	134+
	(+)	1	2	1	2
Legal	(-)	152	65+	135	136+
	(+)	0	1	0	0

*including currently & previously married

+N.S. [1]P < .02 [2]P < .005 [3]P < .001 [4]P < .0005 [5]P < .0002

[6]P < .0000

problems) were rarely reported by the respondents, and were not significantly associated with morbidity as well.

The association between main types of life events and the risk of morbidity across four age/sex groups were shown in Table 3.51. Significant association for family events was found in older men and women of the two age groups, but was absent in younger men. Such association for financial events was only found in men and was absent in women, irrespective of the age effect. For job events, significant association was mainly found in men of the two age groups and (less evident) in younger women, but was not found in older women. The association between physical events and morbidity was found in men of any age, but was only found in women of younger age.

The association between financial events and morbidity for different S.E.S. groups of both sexes is illustrated in Table 3.52. Significant association was found among two S.E.S. groups of male CISR and was absent among female CISR. In general, financial events were significantly associated with morbidity among the skilled workers.

The comparison on the distribution of life events between male and female cases across two age groups is shown in Table 3.53. It was found that the proportion of male cases with job and financial events was significantly higher than that of female cases. Such difference was absent in younger group for financial events. On the contrary, female cases had significantly higher rate of family events than males, mainly in the older age group. Male and female cases did not show any significant difference on the distribution of physical events. The same is true on the distribution of all events, though the rate tended to be higher in young male cases.

There was no significant difference on the distribution of financial events and all events between skilled and non-skilled

Table 3.51 Main life events, chronic stressors, and the risk of minor psychiatric morbidity across age/sex groups

Events/ stressors	Age group	Absence(-)/ presence(+)	Male N	Male C	Female N	Female C
Life events						
Family	< 35	(-)	73	26+	79	33[3]
		(+)	2	3	8	12
	≥ 35	(-)	71	26[4]	40	46[5]
		(+)	6	11	8	45
Financial	< 35	(-)	75	23[6]	85	42+
		(+)	0	6	2	3
	≥ 35	(-)	76	31[3]	48	88+
		(+)	1	6	0	3
Job	< 35	(-)	70	18[6]	86	40[1]
		(+)	5	11	1	5
	≥ 35	(-)	76	27[7]	48	89+
		(+)	1	10	0	2
Physical	< 35	(-)	72	23[2]	86	38[4]
condition		(+)	3	6	1	7
	≥ 35	(-)	68	27[1]	44	74+
		(+)	9	10	4	17
Chronic stressors						
Family	< 35	(-)	74	28+	83	35[4]
		(+)	1	1	4	10
	≥ 35	(-)	75	29[4]	44	54[7]
		(+)	2	8	4	37
Financial	< 35	(-)	74	26+	86	39[2]
		(+)	1	3	1	6
	≥ 35	(-)	73	30[1]	46	52[8]
		(+)	4	7	2	39

+N.S. [1]P < .05 [2]P < .02 [3]P < .01 [4]P < .005 [5]P < .002
[6]P < .0005 [7]P < .0001 [8]P < .0000

Table 3.52 Financial events, chronic financial difficulty, and the risk of minor psychiatric morbidity across S.E.S./sex groups

Event/ difficulty	Sex	Absence(-)/ presence(+)	Skilled N	Skilled C	Non-skilled N	Non-skilled C
Financial event	Male	(-)	113	34[5]	38	20[1]
		(+)	0	6	1	6
	Female	(-)	97	74[+]	36	56[+]
		(+)	2	4	0	2
	Total	(-)	210	108[3]	74	76[+]
		(+)	2	10	1	8
Financial difficulty	Male	(-)	110	38[+]	37	18[2]
		(+)	3	2	2	8
	Female	(-)	99	69[3]	33	22[6]
		(+)	0	9	3	36
	Total	(-)	209	107[4]	70	40[6]
		(+)	3	11	5	44

[+]N.S. [1]P < .05 [2]P < .02 [3]P < .002 [4]P < .001

[5]P < .0002 [6]P < .0000

Table 3.53 Comparison on the distribution of life events across age/sex groups among cases

Types of events	Age group	Absence(-)/ presence(+)	Male (%)	Female (%)
Job	< 35	(-)	18	40
		(+)	11 (37.9)	5 (12.5)[2]
	≥ 35	(-)	27	89
		(+)	10 (27.0)	2 (2.2)[4]
	Total	(-)	44	129
		(+)	22 (33.3)	7 (5.4)[5]
Financial	< 35	(-)	23	42
		(+)	6 (20.7)	3 (7.1)[+]
	≥ 35	(-)	31	88
		(+)	6 (16.2)	3 (3.3)[1]
	Total	(-)	54	130
		(+)	12 (18.2)	6 (4.4)[3]
Family*	< 35	(-)	26	33
		(+)	3 (10.3)	12 (26.7)[+]
	≥ 35	(-)	26	46
		(+)	11 (29.7)	45 (49.5)[1]
	Total	(-)	52	79
		(+)	14 (21.2)	57 (41.9)[2]
Physical condition	< 35	(-)	23	38
		(+)	6 (20.7)	7 (15.6)[+]
	≥ 35	(-)	27	74
		(+)	10 (27.0)	17 (18.7)[+]
	Total	(-)	50	112
		(+)	16 (24.2)	24 (17.6)[+]
All events	< 35	(-)	4	14
		(+)	25 (86.2)	31 (68.9)[+]
	≥ 35	(-)	12	31
		(+)	25 (67.6)	60 (65.9)[+]
	Total	(-)	16	45
		(+)	50 (75.8)	91 (66.9)[+]

*including events related to parents, spouse, children & close relatives

[+]N.S. [1]P < .05 [2]P < .01 [3]P < .002 [4]P < .0001 [5]P < .0000

workers among cases, and the rates between the two groups were in fact quite similar (Table 3.54). It can be seen that all jobless male cases were with job event (unemployment) (Table 3.55). However, female cases with job were found to have significantly higher rate of all events than the unemployed, and the rate of job events was higher in the former group.

Table 3.56 lists out the contents of life events among male and female cases. For the events of job, it can be seen that 60.7% (17/28) were unemployment/retirement which were mainly reported by male cases (15/17). In fact, all the 7 unemployed and 8 retired male cases developed neurotic symptoms within 6 months after they had been unemployed/retired, and only 2 unemployed female cases did so (the other 14 unemployed/retired female cases had reported stressful events other than job). The majority of female cases with job events (5/7) suffered from beginning a new job.

Nearly half of female cases had reported at least one family events whereas only one fifth of male cases did so. Female cases had more family events than males in all types. The most prevalent type was event of children which almost covered all aspects of children's life up to their adulthood. The next prevalent was event concerning spouse and marital relation. Not only the major stressful events of spouse (such as death, major illness, and legal offence), but also stressful events in marriage, including extramarital affair and irresponsible behaviour, were more frequently reported by female cases. It can also be seen that female cases more frequently reported stressful events related to parents and close relatives. Frequencies of academic events (among the single) and physical illness/injury were about the same between male and female cases.

Table 3.54 Comparison between skilled and non-skilled workers on the distribution of life event and chronic stressor among cases

Event/ stressor	Sex	Absence(-)/ presence(+)	Skilled (%)	Non-skilled (%)
Event				
Financial	Male	(-)	34	20
		(+)	6 (15.0)	6 (23.1)+
	Female	(-)	74	56
		(+)	4 (5.1)	2 (3.4)+
	Total	(-)	108	76
		(+)	10 (8.5)	8 (9.5)+
All events	Male	(-)	10	6
		(+)	30 (75.0)	20 (76.9)+
	Female	(-)	25	20
		(+)	53 (67.9)	38 (65.5)+
	Total	(-)	35	26
		(+)	83 (70.3)	58 (69.0)+
Stressor				
Financial	Male	(-)	38	18
		(+)	2 (5.0)	8 (30.8)*
	Female	(-)	69	22
		(+)	9 (11.5)	36 (62.1)**
	Total	(-)	107	40
		(+)	11 (9.3)	44 (52.4)**
All stressors	Male	(-)	31	18
		(+)	9 (22.5)	8 (30.8)+
	Female	(-)	45	9
		(+)	33 (42.3)	49 (84.5)**
	Total	(-)	76	27
		(+)	42 (35.6)	57 (67.9)**

+N.S. *P < .02 **P < .0000

Table 3.55 Comparison on the distribution of event and chronic stressor across sex/employment status groups among cases

Event/ stressors	Sex	Absence(-)/ presence(+)	Jobless (%)	At work (%)
Job	Male	(-)	0	45
		(+)	15 (100.0)	6 (11.8)[4]
	Female	(-)	74	55
		(+)	1 (1.3)	6 (9.8)[+]
All events	Male	(-)	0	16
		(+)	15 (100.0)	35 (68.6)[1]
	Female	(-)	32	13
		(+)	43 (57.3)	48 (78.7)[2]
All chronic stressors	Male	(-)	7	42
		(+)	8 (53.3)	9 (17.6)[2]
	Female	(-)	20	34
		(+)	55 (73.3)	27 (44.3)[3]

[+]N.S. [1]P < .05 [2]P < .01 [3]P < .001 [4]P < .0000

Table 3.56a Contents of acute life event among cases of both sexes

Events	Male n (%)	Female n (%)	Total n (%)
Job	21(31.8)	7(5.1)	28(13.9)
Unemployed	7	2	9
Retired	8	0	8
Started a entirely new job	5	5	10
Big change in duties at work	1	0	1
Financial	12(18.2)	6(4.4)	18(8.9)
Major financial crisis	5	4	9
Moderate financial difficulties	5	1	6
Loss of properties/being stolen	2	1	3
Physical condition	16(24.2)	24(17.6)	40(19.8)
Major illness/injury/operation	16	23	39
Abortion	-	1	1
Children	7(10.6)	29(21.3)	36(17.8)
Death	3	4	7
Unemployed	1	0	1
Financial	0	4	4
Away from home	1	3	4
Prepared for important examination	0	3	3
Major illness/injury/operation	1	5	6
Prepared for children's marriage	0	1	1
Behavior problem (e.g., legal or alcoholic)	0	6	6
Unable to supply tuition fee	1	0	1
Care of young children (started within 6 months)	0	2	2
Marital disruption	0	1	1
Total no. of cases	66	136	202

Table 3.56b Contents of acute life event among cases of both sexes

Events	Male n (%)	Female n (%)	Total n (%)
Parents	3(4.5)	12(8.8)	15(7.4)
Death	0	3	3
Major illness/injury/operation	1	8	9
Divorced/separated	1	0	1
Serious problem with parents	1	1	2
Spouse	3(4.5)	15(11.0)	18(8.9)
Death	0	7	7
Major illness/injury/operation	3	7	10
Serious problem (in jail)	0	1	1
Close relatives	1(1.5)	5(3.7)	6(3.0)
Death	0	1	1
Major illness/injury/operation	1	3	4
Being in jail	0	1*	1
Marital relationship	3(4.5)	10(7.4)	13(6.4)
Extra-marital affair	0	4	4
Serious quarreling/to be divorced	2	0	2
Ran away/separated/divorced	1	0	1
Irresponsible behaviour	0	6	6
Broke off a steady relationship	1(1.5)	2(1.5)	3(1.5)
Interpersonal conflict (boss/colleague)	1(1.5)	1(0.7)	2(1.0)
Environmental change (new school/ military service)	2(3.0)	2(1.5)	4(2.0)
Legal problem (in prison)	1(1.5)	0	1(0.5)
Academic problem**	5(7.6)	6(4.4)	11(5.4)
Events related to family	14(21.2)	57(41.9)	71(35.1)
Total no. of cases	66	136	202

*An old women worried about her grandson (lived with her) in jail.

**including failure in important examination, being unable to receive higher education, and preparing for important test.

b) Chronic psychosocial stressors

These stressors had gradually developed over a certain period of time. A large proportion of them were in fact entirely or partly equivalent to a lack of social and economic support for the cases encountered with. Table 3.57 shows the relation between them and the CIS status across sociodemographic variables. It is obvious that a significant association between caseness and the presence of chronic stressor was, in general, more obviously found among women, and was only among the currently and previously married. For men, such an association was absent among the young age group, as well as among both rural (Yenpu) and urban (Kaohsiung) respondents.

Table 3.58 illustrates the relation between each type of chronic psychosocial stressors and the risk of minor psychiatric morbidity for both sexes. Academic stress was not associated with morbidity among the single men and women. For currently and previously married respondents, significant association was only found among women and included children's problem (the most prevalent), conflict between mother- and daughter-in-law, and marital problem. For stressors encountered by all respondents, only financial difficulty was found to be significantly associated with morbidity, and such association was more obviously found among women (The odds ratios for men and women were 5.3 and 21.8 respectively). It is thus clear that minor psychiatric morbidity was associated with chronic family and financial stress among women, whereas it was only less evidently associated with financial stress among men.

As shown in Table 3.51, the association between chronic family stress and disorder, while indicated in older men and women of any age, was not found in younger men. A similar picture was observed on chronic financial difficulty. Furthermore, the strength of

Table 3.57 Chronic psychosocial stressors and the risk of minor psychiatric morbidity across demographic variables

Demographic variables	groups	Stressor	Male N	Male C	Female N	Female C
Age	< 35	(-)	70	25+	79	28[6]
		(+)	5	4	8	17
	≥ 35	(-)	71	24[5]	42	26[7]
		(+)	6	13	6	65
Employment	Jobless	(-)	11	7[1]	58	20[7]
		(+)	1	8	7	55
	At work	(-)	130	42[1]	66	34[7]
		(+)	10	9	4	27
S.E.S.	Skilled	(-)	105	31[2]	90	45[7]
		(+)	8	9	9	33
	Non-	(-)	36	18[1]	31	9[7]
	skilled	(+)	3	8	5	49
Marital	Single	(-)	54	16+	34	16+
status		(+)	4	2	4	5
	Others	(-)	87	33[5]	87	38[7]
		(+)	7	15	10	77
Community	Yenpu	(-)	50	19+	36	12[7]
		(+)	4	5	5	37
	Chishan	(-)	41	10[3]	41	24[4]
		(+)	3	8	7	23
	Kaohsiung	(-)	50	20+	44	18[7]
		(+)	4	4	2	22
Total		(-)	141	49[5]	121	54[7]
		(+)	11	17	14	82

+N.S. [1]P < .05 [2]P < .02 [3]P < .01 [4]P < .0005 [5]P < .0002 [6]P < .0001 [7]P < .0000

Table 3.58 Types of chronic psychosocial stressors and the risk of minor psychiatric morbidity by marital status

Types of stressor	Absence(-)/ presence(+)	Male N	Male C	Female N	Female C
Single (n 135)					
Academic	(-)	56	17[+]	36	20[+]
	(+)	1	1	2	1
Others (n 354)					
Children's problem	(-)	92	43[+]	93	90[2]
	(+)	2	5	4	25
Marital conflict	(-)	94	46[+]	96	103[1]
	(+)	0	2	1	12
Conflict between mother- and daughter-in-law	(-)		-	95	100[1]
	(+)			2	15
Care of grandchild/ close relatives	(-)	94	48	96	113[+]
	(+)	1	0	1	2
All (n 489)					
Financial difficulty	(-)	147	56[1]	132	91[3]
	(+)	5	10	3	45
Conflict with parents	(-)	152	66	135	133[+]
	(+)	0	0	0	3*
Longterm overworking	(-)	150	64[+]	134	134[+]
	(+)	2	2	1	2

[+]N.S. [1]P < .005 [2]P < .0005 [3]P < .0000

*All were single.

association for these two main chronic stressors was higher in older women than any other age/sex groups.

The effect of chronic financial difficulty on the risk of disorder was found to be more evident among the non-skilled workers (Table 3.52). Statistical significance was found in both younger and older women and in older men, but was absent in younger men.

Table 3.59 shows the comparison between male and female cases on the distribution of main chronic stressors. It can be seen that female cases over 35 had the highest rates for both chronic family and financial stresses of all age/sex groups. For the $\geq$35 groups, female cases had significantly higher rates of the two chronic stresses than males, and such difference was not found for the <35 groups though there was a tendency for the females to have higher rates. For all stressors, female cases had significantly higher rates than males irrespective of age. The rates of all stressors were similar between younger women and older men (37.8% vs 35.1%).

For the comparison between the two S.E.S. groups on the distribution of financial difficulty and all chronic stressors (Table 3.54), significantly higher rates of the former was found among non-skilled workers of both sexes. Such difference was found to be significant for all stressors only in female cases. For the comparison between the jobless and the employed cases on the distribution of all chronic stressors (Table 3.55), the unemployed had significantly higher rates than the employed for both sexes.

Table 3.60 lists out the contents of chronic psychosocial stressors with their frequency distributions among cases. It was rather interesting to see that cases were suffering from three kinds of stressors related to children: (1) They worried about their grown-up children's marriage/economic condition; (2) Their grown-up

Table 3.59 Comparison on the distribution of chronic psychosocial stressors across age/sex groups among cases

Types of stressor	Age groups	Absence(-)/ presence(+)	Male (%)	Female (%)
Family	< 35	(-)	28	35
		(+)	1 (3.4)	10 (22.2)+
	≥ 35	(-)	29	54
		(+)	8 (21.6)	37 (40.7)[1]
	Total	(-)	57	89
		(+)	9 (13.6)	47 (34.6)[4]
Financial	< 35	(-)	26	39
		(+)	3 (10.3)	6 (13.3)+
	≥ 35	(-)	30	52
		(+)	7 (18.9)	39 (42.9)[2]
	Total	(-)	56	91
		(+)	10 (15.2)	45 (33.1)[3]
All stressor	< 35	(-)	25	28
		(+)	4 (13.8)	17 (37.8)[1]
	≥ 35	(-)	24	26
		(+)	13 (35.1)	65 (71.4)[5]
	Total	(-)	49	54
		(+)	17 (25.8)	82 (60.3)[6]

+N.S. [1]P < .05 [2]P < .02 [3]P < .01 [4]P < .002 [5]P < .0001 [6]P < .0000

Table 3.60 Contents of chronic psychosocial stressor among cases

stressor	Male n (%)	Female n (%)	Total n (%)
Academic (poor achievement/studied too hard)	1(1.5)	1(0.7)	2(1.0)
Age over thirty and still not married (subject)	2(3.0)	1(0.7)	3(1.5)
Children's problems	5(7.6)	25(18.4)	30(14.9)
Unhappy marriage	0	1	1
Still not married	2	8*	10
Unfilial/did not look after subject	0	6	6
Only had daughter and no son	1	3	4
No children at all (subject)	1	1	2
Longterm stress on childcare	0	5	5
Longterm financial difficulty	1	0	1
Being old without children to look after him (her)	0	1	1
Care of close relatives*	0	2(1.5)	2(1.0)
Marital conflict (often quarreling/fighting)	2(3.0)	12(8.8)	14(6.9)
Problem between mother- & daughter-in-law	-	15(11.0)	15(7.4)
Unfilial/poor relationship	-	13	0
Daughter-in-law had no son	-	2	0
Financial	10(15.1)	45(33.1)	55(27.2)
Longterm difficulty (moderate)	10	34	44
Longterm difficulty (marked/on pension)	0	11	11
Longterm conflict with parents	0	3(2.2)	3(1.5)
Longterm overworking (more than 10 hours per day/hard labor)	2(3.0)	2(1.5)	4(2.0)
Stressors related to family	9(13.6)	46(33.8)	55(27.2)
Total No. of cases	66	136	202

*including grandchild

children were unfilial or there were no children (particularly son) to look after them (particularly if they were old); (3) They had longterm stress of childcare which even involved the grandmother. Stressors involving children was obviously culture-specific and much more prevalent among females. It was also interesting to see that three cases were stressful for being over 30 years old yet still had not been married.

Marital conflict was more frequently found among female cases as well, and it often involved serious quarreling to the extent of physical fighting.

The obviously culture-specific chronic psychosocial stressor, which only involved women, was the stress between mother- & daughter-in-law. The former often complained of the latter for being unfilial or having no son to continue the family line, whereas the latter would complained of having difficulty in getting along with the former.

The most prevalent of all stressors was the longterm financial difficulty which was obviously more frequently encountered with by female cases. For the 11 female cases on pension, they were mostly old and alone, and the amount of the pension was very limited. The stress of longterm overwork was also specific in Taiwan where people, employed or self-employed, generally have worked very hard.

Chronic stressors were obviously much less frequent among the single and included academic pressure, conflict with parents, and being over 30 yet still single (Their parents would also put pressure on them). On the whole, the two main chronic stressors related to family and finance were more frequently reported by female cases.

Although both acute events and chronic stressors were found to be significantly associated with the risk of minor psychiatric morbidity,

they might also interact with each other. Table 3.61 illustrates an assessment of such possibility based on the estimated relative risk. The subgroup with the coexistence of acute events and chronic stressors had the highest risk of morbidity in both sexes. The likelihood of interaction between them was found with both additive and multiplicative models. However, the former suggested a synergic, whereas the latter, an antagonistic effect.

JOINT EFFECTS OF DEMOGRAPHIC VARIABLES AND STRESSORS

Since both the sociodemographic variables and stressors were found to be significantly associated with the risk of minor psychiatric morbidity, it would be interesting to further examine the joint (interactive) effects between these two sets of independent variables. Therefore, linear logistic modelling was fitted to the data with the proportion of cases as the dependent variable. The four significant sociodemographic variables (age, sex, S.E.S., and employment status) and both acute events and chronic stressors were selected as the independent variables to find the model of best fit. The same procedure of modelling applied to the six sociodemographic variables [p.140-144] was again performed.

(1) Linear modelling with CIS data

The model of best fit (deviance 52.28, df 48) derived from this exercise was:

$$\ln P/1-P = GM + AGEi + SEXj + ACUk + CHR1 + AGEi*ACUk + SEXj*CHR1 + ACUk*CHR1$$

where P, GM, AGEi, and SEXj represented the same effects as those in the CIS model of the sociodemographic variables, and

ACUk is the effect of acute event, where k takes the value of 1 for CISR without acute event and 2 for CISR with it;

Table 3.61 Testing the interactive effect between life event and chronic psychosocial stressor for both sexes on the risk of minor psychiatric morbidity: based on the estimated relative risk

Chronic stressor	No/ Yes	Acute event: Male No	Male Yes	Female No	Female Yes	Total No	Total Yes
	No	1.0*	12.4	1.0*	15.0	1.0*	13.6
	Yes	6.3	24.5	27.4	76.9	20.4	53.7

Measures of effect

	Male	Female	Total
Additive model[1]			
Individual effect			
Acute event	12.4-1.0 =11.4	15.0-1.0 =14.0	13.6-1.0 =12.6
Chronic stressor	6.3-1.0 = 5.3	27.4-1.0 =26.4	20.4-1.0 =19.4
Joint effect	24.5-1.0 =23.5	76.9-1.0 =75.9	53.7-1.0 =52.7
Testing the interaction	11.4+5.3 =16.7 23.5 > 16.7	14.0+26.4=40.4 75.9 > 40.4	12.6+19.4=32.0 52.7 > 32.0
Multiplicative model[2]			
Individual effect			
Acute event	12.4/1.0 =12.4	15.0/1.0 =15.0	13.6/1.0 =13.6
Chronic stressor	6.3/1.0 = 6.3	27.4/1.0 =27.4	20.4/1.0 =20.4
Joint effect	24.5/1.0 =24.5	76.9/1.0 =76.9	53.7/1.0 =53.7
Testing the interaction	(12.4)(6.3) = 78.1 > 24.5	(15.0)(27.4) = 411.0 > 76.9	(13.6)(20.4) = 277.4 > 53.7

*reference group

[1]in terms of excessive relative risk (the difference between the reference group and every other group)

[2]in terms of a multipled relationship (with the reference group as the common denominator and every other group as the nominator)

CHR1 is the effect of chronic psychosocial stressor, where 1 takes the value of 1 for CISR without such stressor and 2 for CISR with it.

b) Interpretation of the model

Table 3.62 shows the details of the model. It was found that there were three two-way interactive effects, namely, age & acute event, sex & chronic stressor, and acute event & chronic stressor on the proportion of cases, and no higher level of interactive effect could be found.

(1) An interactive effect of age and acute life event

Table 3.63 shows the expected odds ratio and proportion of cases. It is clear that respondents under the age of 35 without acute event have the lowest risk of being caseness than any of the other three age/event groups. The risk of morbidity was similar between respondents of both age groups with acute event, and was higher than that for those without. Such risk for the former two groups was nearly 4 times that of older respondents without event, and over 10 times that of younger respondents without event.

(2) An interactive effect of sex and chronic stressor

The expected odds ratio and proportion of cases of the four sex/stressor groups were shown in Table 3.64. Women with chronic stressor was found to have the highest risk of morbidity which was about 2.6 times that for men with chronic stressor, and about 12 times that for men and 9 times that for women without such stressor. Between women and men without chronic stressor, the risk for the former was 1.4 times that for the latter.

(3) An interactive effect of acute event and chronic stressor

Table 3.65 illustrates the expected odds ratio and proportion of

Table 3.62 Joint effects of sociodemographic variables and psychosocial stressors on the risk of minor psychiatric morbidity: linear logistic model

Parameter	Estimate	S.E.	Difference in deviance	df	P
GM	-3.076	0.3763	-	-	-
AGE(2)	1.302	0.3832	3.93	1	< .05
SEX(2)	0.3997	0.2807	5.95	1	< .02
ACU(2)	3.376	0.4152	100.96	1	< .0000
CHR(2)	1.951	0.5742	52.86	1	< .0000
AGE(2)*ACU(2)	-1.360	0.5117	7.31	1	< .007
SEX(2)*CHR(2)	1.230	0.5925	4.34	1	< .05
ACU(2)*CHR(2)	-1.404	0.5877	5.40	1	< .05
Scale parameter taken as		1.000			

[1]Both EMP(2) and SES(2) were included in the linear modelling and has no effect by the model.

[2]AGE(1), SEX(1), ACU(1), and CHR(1) were all constrained to be zero by the model.

[3]Coefficient of multiple determination = 81.9%

Table 3.63 The interactive effect of age and acute life event on the risk of minor psychiatric morbidity in linear model of CIS status

Acute event	Presence/ absence	Risk estimates	Age < 35	Age ≥ 35
	Absence	Expected OR*	0.05	0.17
		Expected proportion	0.05	0.15
	Presence	Expected OR*	1.35	1.27
		Expected proportion	0.57	0.56

*Odds ratio

Table 3.64 The interactive effect of sex and chronic psychosocial stressor on the risk of minor psychiatric morbidity in linear model of CIS status

Chronic stressor	Presence/ absence	Risk estimates	Sex	
			Male	Female
	Absence	Expected OR*	0.05	0.07
		Expected proportion	0.05	0.07
	Presence	Expected OR*	0.32	1.66
		Expected proportion	0.24	0.62

*Odds ratio

Table 3.65 The interactive effect of acute life event and chronic stressor on the risk of minor psychiatric morbidity in linear model of CIS status

Chronic stressor	Presence/ absence	Risk estimates	Acute event	
			Absence	Presence
	Absence	Expected OR*	0.05	1.35
		Expected proportion	0.05	0.57
	Presence	Expected OR*	0.32	2.33
		Expected proportion	0.24	0.70

*Odds ratio

cases of the four event/stressor groups. Respondents with both event and stressor have the highest risk of being caseness, which was 1.2 times that for respondents with only event, nearly 3 times that for those with stressor only, and 14 times that for those without both of them. Contrary to the result in Table 3.61, the risk of morbidity was higher for respondents with acute event only than that for those with chronic stressor only (the risk of the former was 2.4 times that for the latter).

SEX DIFFERENCE IN OUTCOME

Since the linear modelling of demographic factors and psychosocial stressors on CIS status revealed an interactive effect of sex and chronic stressors, it is very likely that the outcome of female cases would be worse than that of male cases. Thus, the result of the one-year follow up study on the 38 cases found in the pilot study was analysed to inquire this possibility. 33 of these cases (86.8%) received the follow up interview. The non-respondents included one man and four women. The man expired due to a heart attack during the year. Three of the four women lost contact after emigration to Taipei, and the rest one refused the interview.

Table 3.66 shows the result of this follow up study. Significant difference was found between either the two sexes, or the two age groups on the rate of remission. The rates of one-year remission for male and female cases were 57.1% and 15.8%, and for younger and older age groups were 50% and 7.7% respectively. The rates of remission for four age/sex groups were: 77.8% (male <35), 20.0 (male $\geq$35), 27.3% (female <35), and 0.0% (female $\geq$35). Thus, the highest rate of remission was found among male cases <35, and the lowest among female cases $\geq$35. The rates of remission among the other two groups (male

Table 3.66 Comparison of one-year outcome of cases found in the pilot study

Sex	Age	Remitter (%)	Non-remitter (%)
Male	< 35	7 (77.8)	2 (22.2)
	≥ 35	1 (20.0)	4 (80.0)
Female	< 35	3 (27.3)	8 (72.7)
	≥ 35	0 (0.0)	8 (100.0)
	Total	11 (33.3)	22 (66.7)

For age difference: X^2 4.59 df 1 P < .05 (Yates' correction)

For sex difference: X^2 4.48 df 1 P < .05 (Yates' correction)

≥35 & female <35) were about the same. Although the sample size in the follow up study was relatively small, the result generally suggested that the interactive effects derived from the linear modelling might be at least partly resulted from the influence of outcome.

TESTING HYPOTHESES 2, 3, 4, and 5

The present study found a prevalence rate of 24.2% for minor psychiatric morbidity (and 26.2% for all mental disorders) which was largely similar to those found in previous surveys reviewed in chapter I. This finding is therefore in support of hypothesis 2. Further comparison between prevalence rates found in this study and those in other surveys was performed in chapter 4, with a detailed discussion about case definition and case finding methods applied in these surveys [p.212-215].

The estimated prevalence rates of minor psychiatric morbidity in rural, suburban, and urban communities were very similar (28.0 ± 4.8%[95% CI] 22.1 ± 4.4%, and 24.2 ± 2.7% respectively). No significant difference could be found between three communities on the risk of such morbidity, either examined by case-control strategy, or by chi-square test on the distribution of CHQ status. Furthermore, the linear modelling of all six sociodemographic variables did not find an independent effect of community when the effects of all other variables were controlled for, and no interaction between community and any of the other variables on morbidity was found. Results of all these statistical tests lent strong support to hypothesis 3 (that no significant difference of prevalence rates of minor psychiatric morbidity will be found between rural and urban communities in Taiwan).

Although a higher risk of minor psychiatric morbidity was found among women assessed by both CIS and CHQ status, an interactive effect of sex and age on such morbidity was also found by linear modelling. Findings suggested that the higher risk was mainly among women aged 35 and above, and was less evident among younger women.

In the present study, poor marital relationship was found to be significantly associated with the risk of minor psychiatric morbidity only in women, a finding similar to that in most Western surveys. Marital disruption was another risk factor for women similarly found in this study and in most Western surveys, though this effect did not appear in the linear modelling possibly due to the limited sample size of the previously married women. The effect of marital disruption did not appear among men. Furthermore, women with marital disruption found in this survey were largely the widowed. Divorced or separated women (and men as well) were quite rare. These findings might be explained by the differences in the structure and significance of the marital status among the Chinese in Taiwan which were discussed in Chapter IV.

Contrary to the findings in Western surveys, however, some other risk factors (including the care of young children, unemployment, and housekeeping) were not found to be significantly associated with the risk of minor psychiatric morbidity among women in the present study. Employed women was even found to have a higher risk of such morbidity than the unemployed by linear modelling.

Acute life event and chronic psychosocial stressor were found to be significantly associated with the risk of minor psychiatric morbidity in the present study. An interactive effect of these two psychosocial stressors was further found by linear modelling, and was independent of demographic factors. Nonetheless, the interactive

effect of sex and chronic stressor indicated that women with such stressor were more likely to have minor psychiatric morbidity than men. Regarding the types of events, significant association between those of job and finance and morbidity was only found for male respondents, whereas such association was only found for female respondents between those of family and morbidity. Furthermore, chronic stress related to family was found to be significantly associated with morbidity only among female respondents. Apart from certain universally stressful events (such as the death of family members, major physical illness, financial crisis, and love frustration), the majority of life events and chronic stress reported by women were found to be family-related. The nature of some stressors, such as marital dischord, was found to be different from that in Western society. Furthermore, some others were found to be culture-specific for the Chinese in Taiwan. These included the conflict between mother- and daughter-in-law, the lack of son or grandson, and the over-worrying about all aspects of children's life. Most of them were long-lasting.

In accordance with the longterm threat of the chronic psychosocial stressors more frequently encountered with by women of older age, the rate of one-year remission among female cases of older age was the lowest of all age/sex groups of cases in the follow up study. Possible relations between outcome and the interaction of sex and chronic stressors were further discussed in Chapter IV.

On the whole, the higher risk of morbidity among women (mainly the older age group) and the characteristic female role stressors associated with morbidity found in the present survey give considerable support to hypothesis 4.

Unemployment was found to be significantly associated with the

risk of minor psychiatric morbidity in the present study. However, such association was only evident in men as the result of the linear modelling on demographic variables indicated. Although unemployed men was found to have the highest risk of morbidity among all sex/employment groups, the risk for employed women was higher than that for unemployed women. For male cases, the unemployed were found to have significantly higher rates of both acute event and chronic stressor than the employed. For female cases, the employed were found to have significantly higher rate of acute event than the unemployed. The rate of chronic stressor, however, was found to be higher among the unemployed than the employed female cases.

The evidence therefore lent support to hypothesis 5 (that unemployment was associated with a higher morbidity in Taiwan) only when the effect of sex was taken into consideration.

CHAPTER IV

DISCUSSION

The main task of this chapter is to examine the strength of hypotheses testing presented in chapter III. In order to complete this task, it is necessary to assess the feasibility of the methods and the accuracy of the performance of this study in the first place. Therefore, this chapter will first evaluate the representativeness of the samples, as well as the reliability and validity of the measurement. Then, the implications of the results derived from this study for the hypotheses are discussed, with reference to the related materials from the literatures to serve as comparing data. Finally, the significance of the present study and its implications for future research will be discussed.

OVERVIEW OF THE METHODOLOGICAL VALIDITY OF THE STUDY

a) Representativeness of the respondents

The representativeness of the respondents in this study can be assured satisfactorily from two sets of evidence: (a) the nearly perfect response rates (98.9% to 100% in three community samples with a total response rate of 99.4%); (b) the representativeness of the respondents in the distribution of age, sex, and marital status as compared with their mother populations.

The very low non-response rate was also observed in two previous community surveys conducted in 1946-8 and 1961-3 in Taiwan. Such results are by no means common among other population surveys carried out here, and might be possibly derived from both the techniques used in making contact with the respondents and the nature of the study. These included: (a) the use of the civil servant for the establishment

of a trustful relationship between respondents and the investigator; (b) the expectation of the respondents for medical check up and aids from the investigator - a medical specialist from a teaching hospital. The screening of the census record for the construction of an accurate sample frame in the present study have further increased the response rate. This method have never been applied in previous surveys carried out in Taiwan.

b) Validity of the CHQ

Both the CHQ and CIS were used as the morbidity measures in a two-stage case finding strategy in this study. The design and development of the CHQ were carefully conducted in the pilot study with a representative community sample. The statistical method used has been pointed out to be optimal for the development of screening tools (Hand, 1979). The wording of some of the CHQ items were modified according to the experience from the pilot study to overcome psycholinguistic problems as much as possible.

Although the very satisfactory validity coefficients derived from the development study has been reduced to some extent in the main study, they were still quite acceptable as compared with those of the GHQ in other studies (Table 4.1). Such decrement was mainly observed in rural community and might be partly due to the lack of rural respondents within the sample of the pilot survey in Kaohsiung for the development study of the CHQ. One might argue that the less satisfactory validity of the CHQ and the difference of the validity coefficients between two sexes could be an important source of bias. In this study, however, the CHQ was not the sole morbidity index to be used in statistical analysis, like many other surveys. The CIS data collected from the second stage clinical assessment were more accurate

Table 4.1 Comparison of the validity of the CHQ and GHQ against the CIS

Survey	Settings	Form & size	Cut-off point	Sensitivity	Specificity	Rate (%) of classification
Goldberg (1972) London	General practice	GHQ-30 n 200 (200)*	4/5	91.4	87	89
Goldberg (1976) Philadelphia	General practice	GHQ-30 n 710 (244)*	3/4	85.9	77.4	80.3
Munoz et al. (1978) Spain	General practice	GHQ-60 n 200 (109)*	10/11	81.0	88.2	84.4
Mari & Williams (1985) Sao Paulo	General practice	GHQ-12 n 875 (260)*	3/4	85	79	82
Tarnopolsky et al. (1979) West London	Community	GHQ-30 n 208 (61)*	4/5	78	72	74
Benjamin et al. (1982) Manchester, U.K.	Community	GHQ-60 n 92 (92)*	11/12	54.6	91.5	78.3
Banks (1983) Sheffield, U.K.	Community (young age group)	GHQ-28 n 200 (200)*	5/6	100	84.5	85.0
Cheng (1986) (this survey) Taiwan	Community	CHQ-12 n 1023 (489)*	-**	69.6	94.8	88.6

*No. interviewed **based on discriminant function score

morbidity measures and the number of CIS respondents were enough for most of the statistical analyses performed.

Therefore, the results of data analysis with both CHQ and CIS measures as the dependent variable were in fact cross-checked to affirm the accuracy of them.

c) Reliability and crosscultural comparability of the CIS

Since the CIS assessment was used as the ultimate criterion of caseness, it is meaningless to discuss its validity (Although some researchers like Spitzer and his colleagues have emphasised the assessment of validity for clinical interviews). Nonetheless, the reliability of the CIS deserves careful evaluation. There are two kinds of reliability of the CIS relevant to the present study: (i) the inter-rater reliability between the British CIS worker and the investigator; (ii) the reliability between the English and the Chinese version of the CIS. The assessment of these two kinds of reliability mainly concerns with the crosscultural comparability between morbidity and symptomatology measures of this study and those of British surveys using the CIS. The first reliability was believed to be feasible since the result of such a study was found to be rather satisfactory [see Chapter II, p.69].

The ideal strategy to assess the second kind of reliability is to study it with the two versions of the CIS by a bilingual psychiatrist on a group of British and Chinese respondents who are also bilingual. Such a difficult task has never been completed in any crosscultural study. For example, the reliability exercise in the International Pilot Study of Schizophrenia was only conducted on English speaking patients. Leff (1974) has pointed out that, while psychiatrists from developing countries tended to agree with psychiatrists from developed

countries on their assessment of emotional expression shown by patients from developed countries, both of them tended to judge quite differently on the emotional expression of patients from developing countries. He related this difference to the differential response of patients from different country origin to different psychiatrists of different countries, as well as the unfamiliarity of the psychiatrists of developed country about the way of emotional expression of patients from developing countries. In his study of the effects of lay interpreter on the evaluation of psychopathology in non-English speaking patients, Marcos (1979) has also found that clinically relevant interpreter-related distortions would lead to a misevaluation of the patient's mental status. In the present study, the investigator's assessment on the affective symptoms of the British respondents was found to be very close to that of the British psychiatrists. Furthermore, a reliability study between the investigator and another Chinese psychiatrist on a subsample (n=50) from the main study was found to be quite satisfactory (1). It is therefore believed that the feasibility of the Chinese version of the CIS in Taiwan and the reliability between the British and the Chinese versions of the CIS measures is probably acceptable.

In a previous section of Chapter I [p.37-40], the problem of psycholinguistics has been emphasised. This problem might also affect the crosscultural comparability. The two-stage translation of the CIS into the Chinese version can only assure what the original CIS questions attempt to inquire will be similarly asked in Chinese respondents. However, such exercise can not answer the following two

Note (1): The reliability measures on case/noncase were: Kappa (K) 0.91, Random error coefficient (RE) 0.96, on presence/absence of each of Reported symptoms & Manifest abnormalities were: K 0.67 to 1.0, RE 0.84 to 1.0, and ANOVA ICC on quantitative measures of each of symptoms/abnormalities ranged from 0.84 to 0.99 (Chong & Cheng, 1985).

questions:

(a) Can the Chinese respondents understand what the questions of the translated CIS are asking about?

(b) Is there any characteristic way of emotional expression in Chinese people which the CIS questions are inadequate, or even unable to inquire for?

Suppose the answer to the first question is "no" and the second is "yes", then the Chinese CIS interview might either over-, or under-estimate, or even fail to identify certain symptoms existed among the respondents in this study. The only way to minimise such biases is to modify the Chinese version of the CIS based upon extensive field experience obtained from Chinese communities. Since there is no useful reference of this kind from previous community surveys, this task was carried out with every effort in the pilot study. The semi-structured form of the CIS was found to allow for effective and more free elicitation of the respondent's unpleasant emotions. It also enabled the introduction of additional questions for clarification of any psychological phenomenon. Any psycholinguistic equivalent expressed by the Chinese respondents to any of the questions of the CIS was taken to substitute the original. The similar exercise was also performed in the Ugandan survey (Orley & Wing, 1979). The discovery of many characteristic psycholinguistic expressions on each of the symptoms of the CIS among the respondents [see Chapter III, p. 109-116] has generally supported the applicability of the modified Chinese version of the CIS.

In summary, the crosscultural comparability of psychiatric assessment between British surveys and the present study, using the CIS, is believed to be generally acceptable.

IMPLICATIONS OF THE RESULTS FOR THE HYPOTHESES

a) Crosscultural differences in minor psychiatric morbidity and sociocultural explanations

The first and second hypotheses both concerned with cross-cultural comparison of minor psychiatric morbidity related to symptomatology (hypothesis 1) and morbidity rates (hypothesis 2).

(1) symptom prevalence

As previously mentioned, the neurotic symptoms found among cases in this study were similar to those found in Western surveys. Cross-cultural comparison of symptomatology often hampered by divergent definition and threshold of symptoms. The design of the present study and the acceptable crosscultural comparability have largely overcome this problem and allowed for such comparison between British surveys and this study on the CIS assessment. Table 4.2 shows such a comparison on frequencies of Reported symptoms and Manifest Abnormalities between one British survey (Jenkins, 1985) and the present study. It can be seen that, although the same symptoms were found among them, the frequencies of symptoms were more or less different between them. The most significant difference was observed to be with anxiety and depression. The weighted prevalence rates of both depression and depressive thoughts (in manifest abnormalities) found in the British survey were obviously higher, and that of anxiety were lower than those in the present survey for both sexes.

The higher prevalence of depression was also found by Brown & Harris (1978) in their Camberwell survey with the PSE (see Table 4.3). Although the threshold of symptom and caseness was different between the PSE and the CIS, the higher rates of depression were consistently found by the investigators with or without the inclusion

Table 4.2 Comparison of the weighted prevalence of Reported symptoms and Manifest abnormalities between Jenkins' survey and the present study using the CIS

	Jenkins' survey*		Present study	
	Male(%) (n 183)	Female(%) (n 138)	Male(%) (n 479)	Female(%) (n 544)
Reported symptoms				
Somatic symptoms	13.3	33.1	19.6	37.1
Fatigue	29.3	36.7	11.9	22.4
Insomnia	14.7	15.1	14.4	28.1
Irritability	21.6	26.4	7.1	16.0
Poor concentration	37.0	26.9	7.7	18.4
Depressive mood	28.0	38.9	4.6	12.7
Anxiety	34.5	32.2	17.5	34.0
Phobias	12.8	15.6	0.0	0.0
Obsessions	18.5	16.2	0.2	0.0
Depersonalisation	8.9	6.1	0.0	0.0
Manifest abnormalities				
Slow, retardation	12.1	6.9	0.2	0.2
Suspicious	2.6	3.3	0.0	0.0
Histrionic	1.9	0.0	0.0	0.4
Depressed	22.9	25.1	4.2	11.9
Anxious/tense/agitated	10.8	5.9	16.5	32.2
Somatic concern	10.2	16.4	9.4	13.8
Depressive thoughts	24.1	26.9	2.5	9.9

*Source: Jenkins (1985)

Table 4.3 Comparison between two community surveys on the distribution of anxiety, depression, and mixed state among female respondents

	Brown & Harris' study*		This survey
	Case only(%)	Case and Borderline(%)	Case (%)
Anxiety only	1.1	4.8	16.0
Depression only	8.5	19.7	2.0
Mixed state	6.6	10.7	8.3
Sample size		458	544
Total rates	17.0	36.0	31.4

*Source: Brown & Harris (1978)

of borderline cases. Since different surveys conducted in London with different case definitions (CIS and PSE) all revealed the same disparity as compared with the present survey, the likelihood of real cross-cultural differences are highly implicated. Tan (1969) has also revealed a higher prevalence of anxiety neurosis among the Chinese in West Malaysia as compared with other ethnic groups there. His finding further supported such implication.

Although findings in the present study have implied cross-cultural differences in the prevalence of anxiety and depression, it is by no means easy to explain such differences. While the possibility of cross-ethnic constitutional differences can not be excluded without further objective evidence, some sociocultural explanations might be speculated. The better prognosis of schizophrenic patients from developing countries than those from developed countries found in the 2-year follow up study of the IPSS (Sartorius et al. 1978) was suggested by Cooper & Sartorius (1977) as having been resulted from the effect of industrialisation on social and family structures.(1) Leaving aside the industrialisation factor, differences in the structure and function of the family and their psychological impact between Chinese and Western societies might possibly account for the differential prevalence of anxiety and depression. The Chinese family contains both very strong affectional and economic ties which has persisted throughout the life of the Chinese individual over generations. In his delivery of a Karl Meninger's Memorial Lecture at the Annual Convention of the American Psychiatric Association in 1971, Hsu has made the following remarks:

Note (1): Some social scientists like Laslett (1972) and MacFarlane (1978) argued that the nuclear family has been the common pattern of family structure among peasantry before the industrialisation took place in Britain and most West-European nations.

> "For the Chinese and others like him, whose culture says his self-esteem and future are tied to his first group, parents, siblings, and other close relatives....They share his glory and they are his principal resources in time of distress and need....Intimacy was readily and continuously accessible to him" (Hsu, 1973).

Hsu's observation clearly pointed out that the main social support available to the Chinese is his (her) family with its strong parent-child kinship tie. On the other hand, the kinship of the Western family is husband-wife dominated (Hsu, 1971). In a comparison between the Western and the Chinese on the nature of "intimate society and culture", Hsu has further noted that:

> "Although parents and siblings are also the first inhabitants of the Western individual's intimate society and culture, he is expected to evict them from it. His culture tells him that his self-esteem and future prospects depend upon how well he can stand on his own two feet...after they marry or reach legal age they have to alter the nature of their relationship with their elders...given a society where manhood and womanhood are defined as independence from parents, the drive for such independence begins long before the ability to do so is attained."

Hence, the adult Westerners have to seek social support from their fellows or confidants (including the spouse) for the rest of his life. However, a relationship with fellows or confidants is quite different from the parent-child kinship. The former is relatively more operative, conditional, and unstable than the latter. The intense loneliness and frustration from such kind of relationship has been speculated by social scientist and medical professional to have been associated with depressive syndromes which might include alcohol and drug abuse.

These anthropological observations have at least two implications on crosscultural differences of distress experience and psychological symptoms. First, the strong family support might prevent the Chinese from either getting depressed or turning into longterm depression better than the less stable, more operational fellow or confidant

relationship which might be either more frustration-provoking, or less supportive in times of frustration. Hence, the lower rate of depression among the Chinese in Taiwan, as compared with that among the Westerner, might be explained by such differences in social supporting system. The Chinese would have a high risk of depression mainly when he has lost his family supporting system, or when he has felt that he is unable to support certain member(s) of his family. The latter case would often create a feeling of shame or uselessness.

Secondly, the strong family tie of the Chinese, though often providing considerable support, sometimes would generate negative effects on his psychological well-being (Hsu, 1986).(1) These included: (i) the creation of certain conflicts between members of the family, such as that between mother- and daughter-in-law (particularly within large family), as well as that between parents and children; (ii) the creation of excessive worrying and life stress within this strong family tie, such as the economic responsibility and pressure of the older generations and the frequent worrying of them about the living of their younger generations.(2) These negative effects, especially the second kind, were speculated to be associated with the higher prevalence of anxiety symptoms among the Chinese people. In particular, they were often life-long and therefore might have also influenced the course of minor psychiatric morbidity. The relatively

Note (1): Personal communications.

Note (2): The economic relationship between generations of the Chinese, being quite different from that of the Western, was often more or less dependent in nature. For example, the younger generation could readily get economic support from the older in need, and the latter often works hard to save properties for the former. In fact, affectional and economic ties of the Chinese family are often inseparable. Just to give another common example, a young Chinese couples with their own small family would tell someone else that: "We are going home to have dinner with our parents". Presumably, a Western couples in the same situation would express in an entirely different way: "My parents invited us for dinner".

lower rate of anxiety found among the Westerners might then be explained by the near absence of such sociocultural stress.

Empirical data collected from the present study give support to these sociocultural explanations. Both acute life events and chronic psychosocial stressors reported by the respondents were largely related to the family. For cases with depression, psychosocial stressors encountered with were mainly those related to the defect of family supporting system, such as the negative attitude of mother- or daughter-in-law, the unfilial son, the death of husband or the only son, the leaving of children abroad and so forth. For cases with anxiety, significant stressors encountered with were largely associated with the well-being of their family members. Some stressors could precipitate the onset of both anxiety and depression. For instance, a mother worrying about her son's major physical illness or behavior problem would also either blame herself for having not looked after him well (illness), or feel shameful (behavior problem). A wife, being depressed for her husband's extramarital affair, would also worrying about her children's living. A depressed mother with her unfilial son and daughter-in-law would still worrying about their well-being. The coexistence of both anxiety and depression among one third of cases found in this survey might be very likely associated with such kind of stressors.

(2) Symptom manifestation: the notion of somatisation

The manifestations of symptoms observed among cases in this study were considerably different from cases found in Western surveys. Here, the notion of pathoplastic nature of the socio-cultural influence on psychopathology suggested by Wittkower & Termansen (1969), German (1972), and King (1978) was supported. However,

findings in this study failed to support the notion of somatisation proposed by Tseng (1975), Kleinman (1977), Ling (1980), and Lin (1982). Tseng (1975) reported that 70% of all patients seen at one psychiatric out-patient clinic in Taiwan had somatic symptoms and complaints, and 40% among these patients reported somatic problems exclusively. Although rather high proportion of cases found in this study reported somatic symptoms (83.7%), all of them manifested certain kinds of emotional symptoms. Furthermore, the rate of somatic symptoms found among patient population in some Western surveys was by no means lower than that reported by Tseng. For example, Woodruff et al. (1967) reported that, among 72 psychiatric inpatients suffering from depression, 87% complained of poor appetite, and 74% had various kinds of somatic symptoms. In their study of 51 drug-free depressive patients, Mathew et al. (1981) found 86.3% of patients had poor concentration, 82.4% had weakness, 76.5% had headache, and so forth. Finally, the rates of somatic symptoms and somatic concern found in Jenkins' survey for both sexes were in fact very similar to that found in the present study (see Table 4.2).

Since the evidence clearly indicated no difference on rates of somatic symptoms between the Western and the Chinese neurotic patients and cases, some explanation about why a rather high proportion of patients in Tseng's study only reported somatic symptoms/complaints seems warranted. In their general practice survey, Goldberg & Blackwell (1970) found that patients whose psychiatric illness was not recognised by the general practitioner often presented their emotional problems in physical terms. They proposed three explanations for such mis-diagnosis, namely, social learning and expectations, denial (including social stigma), and the interaction/association between physical and psychological symptoms.

While the findings of Goldberg & Blackwell might also be relevant to the Chinese neurotics, they can not explain why the emotional symptoms of such patients were surprisingly missed by the psychiatrist. Three reasons based on findings of the present study might account for this. First, a number of psycholinguistic expressions of cases found in this study were unfamiliar to the psychiatrists (in Taiwan) whose patients had been mainly the psychotics and the upper-middle class neurotics (Most of the psychiatrists themselves also belong to the upper-middle class). The latter, unlike many working class cases in the community, were better educated and rather familiar with the emotional expressions of the Westerner. Such phenomenon had been pointed out by German (1972) and Wittkower & Termansen (1969). In fact, a relatively small proportion of the cases found in this study (mainly those with better education and higher social status) were able to understand the CIS items directly translated from the original version. Some of them even spontaneously reported their psychological distress.

Hence, most of the psychiatrists in Taiwan, whose professional background being heavily shadowed by Western psychiatry, were presumably less able to inquire the emotional problems of many neurotic patients who have only received limited education. This viewpoint might be especially relevant 15 to 20 years ago when Tseng conducted his research. The educational level of people in Taiwan have been considerably heightened, and mental health education has been increasingly emphasised since. These probably have begun to alter the help seeking behaviour of cases of minor psychiatric morbidity, with an increased demand for, and better understanding about psychiatric treatment. In a recent study, Lee (1986) reported that, while 37.4% of consecutive psychiatric outpatients, seen in the

Department of Psychiatry, National Taiwan University Hospital, only presented somatic symptoms as their chief complaints, 87.7% had at least one somatic symptom, and all of them were found to have psychological symptoms after a detailed psychiatric interview. Comparing with the data found in Rochester, U.S.A., Lee revealed a significantly higher rate of cases in Taiwan presenting somatic symptoms as the chief complaints than their American counterparts (72.9%:22.9%). Furthermore, the presence of somatic symptoms was found to be significantly associated with lower educational level, older age, previous experience of major physical diseases, and a obsessive personality trait. These data were obviously in accordance with findings in the present survey.

The psycholinguistic difficulty has been intensified by the existence of several local dialects among Chinese people. These dialects, though much feasible for emotional expression, were often unable to be used as the language of communication between patients and psychiatrists. Many of them in fact lack written character, whereas the clinical term of psychological symptoms were primarily expressed in standard Chinese (Mandarin).

Secondly, the majority of people in Taiwan do not consider neurotic/emotional symptom as a kind of disease phenomenon since, the traditional Chinese medical concept only include physical illness. Moreover, it uses physical terms to describe emotional distress, such as "weakness of the nerve/heart", "insufficiency of the kidney", "high internal fire" etc.. In this study, as previously mentioned, the only 6 cases currently visiting psychiatrist all reported some kind of somatic symptoms related to the brain as their reason of consultation.

Thirdly, it is possible that many visitors of the psychiatric clinic only suffered from physical symptoms related to the central

nervous system and lacked emotional symptoms due to their help seeking behaviour cited above. As several researchers (e.g., Dohrenwend et al. 1969; Gillis & Egert, 1973) have pointed out, such visitors are usually assumed to be psychiatric patients, irrespective of whether they are mentally ill or not. Hence, a proportion of the "patients" reported to have mere physical complaints by Tseng could be people of this sort. In particular, the Department where Tseng carried out his research was entitled "Neuropsychiatry" until 6 years ago. This name is usually interpreted by laymen as brain specialty. The implication of it to the general population in Taiwan on their help seeking behaviour is quite obvious.

It is therefore understandable that, while many neurotic patients of traditional background were unable to express their emotional distress, many psychiatrists themselves were also short of experience to inquire and to identify emotional symptoms of such patients in Taiwan (It is probably also true in Mainland China since several reports there similarly emphasised terms related to somatisation).(1)

(3) Overall prevalence rates: how significant the differences are?

Table 4.4 lists the prevalence rates of psychiatric morbidity derived from community surveys conducted after 1970. Among them, three major case finding methods have been applied: the screening questionnaire, the interview schedule, and the two-stage strategy with both of these two instruments. Apart from differences in case definition, the indices of morbidity used in these surveys were also obviously different. Despite of all these wide disparities,

Note (1): Wang & Tuan (1957) reported that neurasthenia (popular use of this term) accounts for two thirds of neurotic patients in the People's Republic of China. Chin & Chin (1969) reported that patients complained of neurasthenia became the target of mental health workers during the Great Leap Forward (cited from Lin, 1982).

Table 4.4 Prevalence rates of psychiatric morbidity in community surveys after 1970

Survey	Age range & size	Tool & case definition	Prevalence (%)
Comstock & Helsing (1976) Kansas City	18+ yrs n 1154	CES-D (≥ 16)[1] depression	BL 26.4 (17.6)* WH 19.8 (20.1)*
Eaton & Kessler (1981) Nation-wide	24-75 yrs n 2867	CES-D (≥ 16)[1] depression	BL 23.0 (21.3)* WH 15.8 (16.0)*
Finlay-Jones & Burvill (1977) West Australia	15-69 yrs n 2324	GHQ-60 items[1] (≥ 12)	T 16.3 M 13.6 F 18.7
Andrews et al. (1977) East Sydney	20-69 yrs n 863	GHQ-20 items[1]	24.0
Goldberg et al. (1976)	16+ yrs n 213	GHQ-60 items[1]	21.6
Weissman & Myers (1978) New Havern	26+ yrs n 511	SADS-RDC[2]	14.7 17.8 (+ PD)
Carstairs (1975) South India	? (age) n 1241	two-stage[2] survey	M 32.0 F 40.0
Brown & Harris (1978) Camberwell London	18-65 yrs n 458	PSE[3]	C 16.6 (women) CB 34.3 (women)
Prudo et al. (1981) Outer Hebrides Scotland	18-65 yrs n 355	PSE[3]	C 13.5 (women) CB 33.0 (women)
Orley & Wing (1979) Uganda	18+ yrs n 206	PSE-CATEGO[4] (ID ≥ 5)	T 25.3 M 24.0 F 27.0
Bebbington et al. Camberwell London	18-64 yrs n 800	two-stage[4] PSE (ID ≥ 5)	T 10.9 M 6.2 F 15.1
Tarnopolsky et al. (1978) London	15+ yrs n 208	GHQ & CIS[1] (OSR ≥ 2)	26.0
Dilling & Weyerer (1984) Traunstein	15+ yrs n 1536	CIS[1] (OSR ≥ 2)	T 18.6 M 15.1 F 21.3
Cheng (this survey) (1986) Taiwan	15+ yrs n 1044	CHQ & CIS[1] (OSR ≥ 2)	T 24.2 (26.2)+ M 16.2 (18.0)+ F 31.4 (33.3)+

*adjusted rates +including psychotic & organic conditions

Index of prevalence: [1]one-week [2]point [3]one-year [4]one-month

BL: Blacks WH: Whites PD: Personality disorders C: case
CB: case & Borderline T: total M: Male F: Female

prevalence rates of all mental disorders found in these surveys have been generally around 10-30%. The bulk of such morbidity was the minor psychiatric morbidity. There is a trend that comparatively similar prevalence figures were found by the same tools. For example, the estimated prevalence rates by the GHQ were around 16-24%, those by the PSE were around 13-15% in surveys in Great Britain.(1) The Ugandan survey with the PSE found a twofold rates as compared with the figures in Camberwell and the authors hesitated to affirm such difference to be true. One of their speculations was that there were considerable amount of untreated cases in Uganda. The rates found by the CES-D among Blacks and Whites in a number of American communities were initially found to be different statistically. These differences, however, disappeared when the rates were adjusted for the effects of sociodemographic variables (e.g., Roberts et al. 1981; Frerichs et al. 1981). The figures were also around the same range as those found in GHQ surveys.

The consideration of crosscultural comparability in the present study (the preparation of the CIS and its satisfactory reliability) enables a more significant comparison on morbidity rate of minor psychiatric disorders between British and the present surveys. It can be seen that the one-week prevalence rates of such morbidity found in the London survey by Tarnopolsky et al. (1978) and in this study were 26% and 24.2% respectively. Thus, using identical case definition and case finding instrument, the prevalence rates of minor psychiatric morbidity were found to be almost identical among population samples selected from both London and Taiwan.

Since findings in the present study lent support to hypothesis 2 (that the prevalence of minor psychiatric morbidity in Taiwan would be

Note (1): Comparison was made among women, and only rates of cases in both surveys of Brown & Harris (1978) and Brown & Prudo (1981) were used.

similar to that found in previous surveys), there may be implication that the overall rates of minor psychiatric morbidity are largely similar among all ethnic groups. It may also imply that, although culture itself is likely to influence the patterns and manifestations of symptoms of minor psychiatric morbidity, there is no significant difference in morbidity rate between different cultures or ethnic groups. This implication, however, does not take into consideration the effect of changes within any particular culture over time. One such important change, inquired in hypothesis 3, is urbanisation.

(4) Urbanisation: does it increase the risk of minor psychiatric morbidity?

The design of the present study in the selection of samples allowed for a distinct comparative exercise on rates of minor psychiatric morbidity between urban, suburban, and rural communities within a developing country. Earlier work on the effect of urbanisation nearly all concentrated either in the comparison between rural and urban communities of developed country (e.g., Krupinski, 1979; Brown & Prudo, 1981), or between rural community of under-developed country and urban community of developed country (e.g., Orley & Wing, 1979; Burvill, 1982). The first kind of comparison can not examine the effect of the process of urbanisation since rural life in developed country has been pointed out to be fairly urbanised (Levitt, 1972; Kristol, 1974). The second kind of comparison can not examine the possible confounding effect of original cultures.

The present study was believed to be free from these two short-comings, and thus allowed for examining the effect of urbanisation. The finding has been in agreement with those found in surveys carried out in developed countries, including the States (e.g., Comstock &

Helsing, 1976), Australia (e.g., Krupinski, 1979), and the Great Britain (e.g., Brown & Prudo, 1981). The rather low case rates found in Tonga by Murphy & Taumoepeau (1980) could be due to the case finding methods applied by the authors. They use Key informant in the screening stage, a method previously criticised for the high possibility of missing a substantial amount of minor psychiatric morbidity. Such possibility has been confirmed in the present study with a comparison between prevalence rates found in the two previous Formosan surveys by Lin (1953) & Lin et al. (1969) and the present survey. Since these three surveys have all been carried out in the same country, the huge difference (thirty fold) of rates can not be explained by urbanisation only. The very much low rates found in earlier surveys were most likely due to the use of Key informant like the Tongan survey.

Since findings in the present study lent support to hypothesis 3, it may imply that the notion of an adverse effect of urbanisation on psychological well-being, assessed by the prevalence of minor psychiatric morbidity, is misleading. Although researchers like Brown & Prudo (1981), Burvill (1982), and Dressler & Badger (1985) stressed the interaction of specific social risk factors with specific community, no such interaction between morbidity and sociodemographic variables was found by linear modelling in the present study. Nonetheless, such possibility might still be there. For instance, the association between marital disruption (in particular, the widowed) and the risk of morbidity in women was found in rural and (less evident) in suburban, but not in urban communities. The failure in finding an interactive effect between sex, marital status, and community on morbidity might be due to the relatively small number of the previously married in the sample. Further investigation is

therefore implicated.

b) Sex difference in minor psychiatric morbidity

(1) Assessment of the evidence

Hypothesis 4 stated that the female preponderance in minor psychiatric morbidity and the association between such morbidity and female role stress, found in most Western surveys, will also be found in Taiwan, but the nature and/or significance of the stressor will be different from those found in Western surveys. Earlier studies on sociodemographic distribution of minor psychiatric morbidity have applied a variety of case definitions and case finding methods. Their results indicated that the higher rate of minor psychiatric morbidity, though consistently found in White populations, was not evident in a number of surveys both in non-Western and in some Afro-American communities. Dressler & Badger (1985) have further revealed the inconsistency of female preponderance across urban and rural black communities in the States. The evidence is therefore rather controversial.

The use of both standardised psychiatric interview with crosscultural comparability and validated screening instrument in the present study is believed to add more convincing evidence for the clarification of the controversy. It is clear that a female excess of disorder, either assessed by screening questionnaire or clinical interview, was found among rural, suburban, and urban Chinese communities. It is therefore suggested that this sex difference in morbidity probably was not race-dependent, since it was not consistently found among different communities of the same race. Sociocultural factors are obviously implicated. This notion was further supported by Jenkins' study (1985) with a carefully selected,

homogeneous employed population. No sex difference on minor psychiatric morbidity could be found by the investigator after several sociodemographic variables have been controlled for.

(2) Explanation 1: the female expressiveness

Since the evidence from this survey and previous work all supported a sociocultural explanation for the higher morbidity among women found in certain societies, it would be sensible to examine some explanations proposed hitherto via crosscultural comparison. The first to be discussed is the "female expressiveness" which implies that the sex difference in morbidity is largely due to the differential illness behavior between the two sexes, and therefore is not a true difference.

The notion that women are more likely to express their emotional feelings has been repeatedly mentioned (e.g., Sudman & Bradburn, 1974; Briscoe, 1982). However, it was not supported by the CHQ findings in the present study. First, in the pilot study, there was no significant difference between the mean CHQ scores of both sexes [see Supplement 1]. Secondly, there was no difference on the estimated false positive rate between male and female respondents in the main study (5.4% vs 5.0%). Thirdly, both the pilot and the main study all found a slightly higher rate of false negatives among female respondents than males (33.1% versus 25.3% in the main study). The evidence thus failed to support the notion of female expressiveness among the Chinese. The absence of female expressiveness among Chinese women might be explained by a crosscultural difference of emotional expression, i.e., the Chinese women in Taiwan, unlike their Western counterparts, are not emotionally more expressive than the Chinese men.

Although the evidence in the present study supported a true difference of prevalence rate between the two sexes, there were interactive effects between sex and other sociodemographic variables on the risk of morbidity. In other words, this sex difference was not homogeneously distributed across main sociodemographic variables.

(3) Explanation 2: the effect of marriage

The sex difference in minor psychiatric morbidity noted among the married was not found in the single, which is similar to the findings reported by Bradburn (1969) and Briscoe (1982). However, neither the independent effect, nor any interaction of marital status and sex on the risk of morbidity was found in linear modelling. Some previous studies have observed better psychological well-being in married men than the single (Bebbington et al. 1981; Briscoe, 1982), and a higher rate of morbidity in married women than the single (Knupfer et al. 1966; Surtees et al. 1983). Briscoe (1980) has further investigated the effect of age and found a worse psychological condition in single men of all ages and in married men under the age of 35 as compared with married men over the age of 35. The present study, however, failed to find any significant difference of morbidity among the single under 35, the married under 35, and the married over 35 in men (The number of the older single men was too small for statistical comparison). Moreover, the higher risk of morbidity in married than the single women, though evident in the present study, was only found among women over the age of 35. There was no such trend in younger women (The size of the older single women was again too small for comparison).

The very low percentage of the older single respondents reflects the sociocultural characteristic of the Chinese in Taiwan, namely, the

emphasis of family as the basic social structure. Although the small sample size has limited the investigation of the psychological state of the single over the age of 35, it might be speculated that their mental health will be no better, or even worse than the married of the same age group. The rationale for this speculation is again based on the sociocultural observation that the young Chinese is expected by his (her) parents and others surrounding him (her) to get married before the age of 30, and to performed the various family roles. Being single over the age of 35 would imply a failure on social function performance. It is likely to bring about a great deal of psychosocial stress, and would thus increase the risk of psychological ill-health. Such social expectation and stress were higher among women than men, since the former would be sneered out of countenance (the most common term was "old virgin"). Such a chronic stressor, though reported by three cases, was not found among noncases.

That the significant association between being married and minor psychiatric morbidity in women was only found among the older in the present study might explain why an interaction between sex and age, instead of sex and marital status, was derived from the linear modelling. One possible explanation for this finding is that, while many Westerners (notably in societies of Protestants) would deal with a dissatisfied marriage by divorce, their Chinese counterparts in Taiwan rarely do so. The frustrated couple often tolerates his or her dissatisfied marriage in order to maintain the strong family tie, and this is particularly true when the couples have children (the parent-child dominated family system).(1) The evidence suggested that

Note (1): A number of sociocultural factors have prevented him(her) from having a divorce: the negative attitude of the public and relatives towards divorce, the lack of economic independence of the divorced women, and the strong concern of children's well-being. The last factor has been the main reason in many cases.

significantly more married women than men have suffered from poor marital relationship. Moreover, this kind of stress has been often long-lasting and the degree of dissatisfaction was found to be significantly higher in the older married women than their younger counterparts.

The notion that marriage has a protective effect on men's psychological well-being (Gove, 1972) needs to be tested by further research with enough sample size of single men in the older age group. The same is true for the psychological assessment of men with marital disruption since the number within this sub-group is also too small. The very high percentage of the widowed among the previously married has in fact made the assessment of the psychosocial impact of this group almost equivalent to that of widowhood. Although earlier studies have in general observed a higher risk of minor psychiatric morbidity among the previously married than the single and the currently married men and women, the results from the present study only found such trend in women. Furthermore, widows were found to have significantly higher rate of morbidity than widowers on the CHQ measures. When the age factor was taken into consideration, the significantly higher rate of morbidity in the previously married than the currently married was only found among the older women. That the majority of the previously married were over the age of 35 (91.8%) and its small sample size might partly explain the finding of an interactive effect of age and sex in linear modelling. It might be speculated that an interaction between sex and marital status on morbidity might be found in the modelling if the sample size of the previously married could be increased.

The interactive effect of sex, marital status, and socioeconomic status found by Meile et al. (1976), indicating that the married women

in lower SES were at the greatest risk of morbidity, was not found in the present study as well. On the contrary, an independent effect of SES was revealed from linear modelling.

(4) Explanation 3: the role of social risk factors

A number of social risk factors, notably those frequently found to be associated with women's higher prevalence of minor psychiatric morbidity in previous work, have been examined in the present study. A comparison between findings in Western surveys and the results from the present study was performed in order to test hypothesis 4. The role of housewife, having been found to be associated with women's poor psychological well-being in Western societies (Birnbaum, 1975; Briscoe, 1982; Warr & Parry, 1982), was not indicated in the present study. The risk of morbidity in full-time housewives, assessed by both CIS and CHQ measures, was in fact similar to that in women with full-time job. Furthermore, the proportion of married women reporting a negative attitude toward housekeeping was too small (7.4% only) to require any further examination.

The lack of association between the role of housewife and its stress and the female excess in morbidity might be explained by the traditional sociocultural expectation on Chinese married women within the strong family tie. Evidence indicated that the majority of all female respondents viewed the housekeeping job as their determined obligation and were willing to accept it. It is therefore implied that the married women in Taiwan generally accepted the housekeeping job as part of their nurturant role within the family.

Another risk factor, often reported to be associated with the housewife status (or the lack of employment outside the home), is child rearing (Richman, 1976; Brown & Harris, 1978; Bebbington et al.

1981; Briscoe, 1982). This factor was again, found to have no association with disorder in the present study, even after statistical adjustment by all demographic variables. The synergic interaction between working class women and childcare on disorder, found by Bebbington et al. (1984), was therefore not supported in the present study. Conversely, the risk of morbidity tended to be higher among those with no children under 15, particularly of the older married.

These controversies might be explained by the cross-cultural difference in child rearing and parent-child relationship. Most of the Chinese parents, unlike their Western counterparts, have taken care of their children up to adulthood with all efforts. Even after that, they still very concern about the living of their children. As previously mentioned, the parent-child family tie (both affectional and economic) has continued over generations. As a result, the Chinese parents do not encourage their children to be independent as the Western culture has always emphasised (individualism!). Hence, the young Chinese commonly live together with his siblings and parents before they have got married. After that, parents usually live with at least one married young couples and all the single children. Because of their full concern about their children's well-being, they have always worked hard and saved money as much as they can for their children. Unlike the Western parents, they often sacrificed their own enjoyment in life. The Chinese mother, with her nurturant role in the family, is particularly like this.

For the Chinese parents, therefore, the stress of childcare is independent of their children's, as well as their own age. On the other hand, the stress of childcare would be only limited to the young one for the Western mother. Apart from the relatively less family

support in childcare, the considerably higher rate of one-parent family in many Western societies (Which is rather few in Taiwan) might also account for the high stress she is encountered with. It might be further speculated that such kind of stress in Chinese women, once become influential on psychological well-being, would be rather difficult to be removed. The significant association between chronic family and economic stressors and disorder among the older married, and the significantly higher proportion of this group among cases with these stressors lent support to this speculation. Hence, these cultural observations could well explain why the older married Chinese women without young children had a higher risk of morbidity.

Thus, the sociocultural meaning for both housekeeping and childcare among Chinese women obviously has to be considered while inquiring the effects of these two risk factors on minor psychiatric morbidity. The same is likely to be true for "poor marital relationship". Although the association between marital dissatisfaction and disorder, found in Western surveys (Tennant et al. 1982), was also evident in the present survey, the nature of it was somewhat different between Chinese and Western societies. Most of the Western surveys have applied the concept of "lack of intimacy or confiding relationship" which involves a spouse or a lover (Campbell et al. 1983; Bebbington et al. 1984). Such a concept may be relevant in many Western societies where the confiding relationship does not necessarily involve marriage. It is however inadequate in Chinese societies where an intimate relationship between two young lovers would sooner or later bring about a marriage (Particularly when it involves a sexual relationship). For the young Chinese single, they can always get affectional support from their parents whom they often live with. For the married, the family as a whole (and not only the

couple) would give them a strong social support.

Hence, the context of social support is different between Western and Chinese societies. The present study has therefore used "poor marital relationship" to inquire its effect on the risk of disorder among the married. Significant relationship between them was only found in women and not in men, a finding similar to that in Western surveys. However, the frequency of reporting such a relationship in married women was found to be significantly higher than men in the present study, contrasting to the similar frequency of such relationship between the two sexes reported by Tennant et al.(1982). Clearly, the stress of marriage is more prevalent in women than men in Taiwan.

The nature of poor marital relationship reported by the Chinese married is different from that reported by their Western counterparts. Intimacy was defined and assessed by the latter as the ability of the spouse to show affection and companionship, to be considerate of the subject's feelings, to give the subject good advice and support and interest shown in the sexual relationship (Tennant et al. 1982). Poor marital relationship, however, was more often described by the Chinese women as having a husband who were dissipated and irresponsible to the family, has extramarital affair, or put verbal or physical insult on them. The proportion of married women who reported that their husbands were inconsiderate or not showing affection were rather small. Even having a husband with extramarital relationship, many women would still tolerate if only the "relationship" was not fixed on a particular subject and their husband still care about the family living. These women would rest their hope on their children, and obtained consolation/support from their children and sometimes, from their own families. Here, the function of the family tie is well

demonstrated. When such consolation or support was not there (For instance, their children were unfilial or their own parents do not give them enough support), a high risk of overt depression would be expected. Furthermore, the loss of such support and the frustration thus developed is by no means easy to be overcome since these women have long been dependent on it.

In summary, for the Chinese women in Taiwan, the lack of significant association between the risk of minor psychiatric morbidity and social risk factors, including the care of young child and the housekeeping, might be explained by the sociocultural characteristics of their families. Such characteristics might also account for the different nature of the significant association between poor marital relationship and the risk of such morbidity from that found in Western surveys. Nevertheless, there were culture-specific psychosocial stressors in Chinese society of Taiwan, which were found in the present survey to be associated with the higher risk of morbidity in women.

(5) Explanation 4: life event & chronic psychosocial stressor - differences between the Western and the Chinese

The consideration and careful inquiry of culture-specific psychosocial stressors in the present study have permitted a thorough examination of their association with minor psychiatric morbidity. Previous work on the causal relation between life event, chronic stressor, and minor psychiatric morbidity has been encountered with three main problems: the validity of measures, the reliability of event/stressor reporting, and the temporal relationship between event/stressor and disorder. Since the present study was designed to be cross-sectional and the inquiry of the stressors was retrospective, it

is impossible to entirely eliminate the bias arising from the retrospective falsification (Brown, 1974; Tennant et al. 1981). Nonetheless, every effort has been made to clarify the time sequence between the onset of event (nearly all of them were able to be dated), the existence of chronic stressor, and the occurrence of symptoms. As a result, many events and chronic difficulties were judged to be postmorbid and were separately recorded for other studies.(1)

Although the likelihood of effort after meaning must be considered in the investigation of event/stressor, the possibility of under-reporting might also be an important source of bias, since most people are reluctant to inform the investigator with whom he has just acquainted about his very personal misfortune(s) (in particular, the Western respondent). In the present study, the trustful and cooperative attitudes of the respondents towards the "health visit" was believed to give considerable contribution to a more reliable stress reporting. Furthermore, additional informations about the living of every respondent, collected from the local civil servants, were found to be quite useful for cross checking on the report of stressors.

The incorporation of chronic difficulties into the assessment of

Note (1): Here are two case examples of such distinction. The first Case (#1033) was a woman of middle age who was anxious and depressed after she had been found to have a nasopharyngeal cancer 5 years ago. She received surgical intervention and irradiation therapy which had cost her a great deal of money. Her husband began to have extramarital affair a few months later, and she continued to be depressed and worry about her children's living till the time of interview. In this case, only major physical illness was taken as the antecedent event, and the rest (husband's extramarital affair and economic difficulty) were judged to be factors affecting the course of her mental illness. The second case (#2028) was a 69 years old lower S.E.S. women with chronic anxiety for 5 years. Her first daughter-in-law had three daughters (all grown-up) and her second daughter-in-law had no child for years. She had gradually become anxious with poor memory, fatigue, irritability, severe insomnia, and headache for having no grandson which was taken as her chronic stressor.

life event stress has been criticised by Tennant et al. (1981). This problem is mainly related to the evaluation of the contextual threat of events. Since the degree of subjective emotional threat has often been used to assess the empirical validity of event measures, It is difficult to establish an objective criterion independent from other antecedent risk factors for such assessment. One possible solution is to include only those events judged by most people to have severe longterm threat. In so doing, it would be more likely to separate the effect of chronic stressor. It would also eliminate the influences of effort after meaning, personality and coping behaviour on the assessment of event/stressor. Moreover, these events/stressors and their magnitude of threat may vary considerably from one culture to another. Owing to the lack of empirical data on these measures in Taiwan, the present study has selected events/stressors reported by most respondents to be quite stressful for the analysis of their association with morbidity. It can be seen that, while many of these events/stressors (Table 3.56 & 3.60) were similar to those reported in Western surveys, others were specific to the Chinese in Taiwan.

With all these methodological problems in stressor measures, findings in the present study and its implications still merit a cautious interpretation. There are at least three implications concerning the association between stressor and disorder. First, a number of events or chronic stressors were similarly found to be associated with the risk of morbidity in the present study and in Western surveys. These included the death of significant family members, major physical illness/injury, major financial crisis/ difficulties, major job problems, and marital problems. On the other hand, culture-specific events/stressors for the Chinese in Taiwan were also vividly observed. They mainly involved parent-child kinship of

the Chinese family. Typical examples were the conflict between mother- and daughter-in-law, the unfilial children, the endless and excessive psychological worrying about children's living, and the longterm marital dischord.

Even with the same kind of event/stressor, its nature was considerably different between different societies. In the case of the Chinese in Taiwan, all the events/stressors were in fact closely linked with the affectional and economic ties of their families. They are not just the individual's own business as many of them would be in Western societies. For example, the marriage of two young Chinese lovers would much involve both sides of the families. Their parents should agree to the proposal first, and then have to prepare everything for the wedding, as well as a new place for the new couple to live. The same is true when marital dischord happened which usually became a conflict between the two families. Similarly, the stress of financial event/difficulty for the Chinese individual usually involves its great effect to the living of his family.

Secondly, there was no sex difference on the strength of the association between life events and disorder, a finding similar to that reported by Paykel et al. (1971) and Personn (1980). Meanwhile, no significant difference in rates of events was found between the two sexes within both case and noncase groups, similar to that reported by Myers et al. (1971) and Henderson et al. (1980). On the other hand, an interaction of sex and chronic stressor on morbidity was found in linear modelling, which indicated that chronic stressors have significantly more impact on the psychological well-being of women than men irrespective of the age difference. Radloff & Rae (1979) have pointed out that Western women experience more chronic social stress, such as lower education, lower occupational status, fewer

leisure activities, and more current physical illness. In the present study, the effect of socioeconomic status was found to be independent of sex, and employed women were found to have somewhat higher risk of morbidity than the unemployed (notably the housewives). Moreover, the impact of recent physical illness on psychological health was evident for both sexes. On the other hand, culture-specific chronic stressors encountered with by women were found in the present study. These have implied that, while women in Western and Chinese societies of Taiwan have both experienced more chronic psychosocial stresses related to their higher morbidity than their male counterparts, the nature and significance of the stressors are quite different from each other. That the independent effect of S.E.S. found in the first linear modelling of sociodemographic variables has disappeared in the second linear modelling to which event and stressors were added might be explained by the overwhelming effect of the chronic stressors (To put it in another way, the effect of S.E.S. might have been included in the effect of chronic stressor).

Thirdly, the present study revealed an interactive effect of acute events and chronic stressors from the linear modelling. Since this effect was independent of demographic variables (There was no significant three-way interaction resulted from the modelling), it has implied that the interactive effect of acute event and chronic stressor is similar for both sexes irrespective of their age. Moreover, the effect of acute event is stronger than that of chronic stressor. A third interactive effect of age and acute event derived from the modelling implies that the main risk factor for younger respondents is the acute event since, while the risk of morbidity was similar for younger and older respondents with acute event, such risk

for younger respondents has become much lower than that of the older when event was not there.

Recent studies of the interactive effect of social risk factors and life events on minor psychiatric morbidity have been largely concentrated on women without a controlled group of men, and their results have been pointed out to be equivocal and inconclusive (Tennant, 1985). The failure in replicating Brown & Harris' vulnerability model in subsequent studies has been partly referred to differences in sampling, definition of variables, and statistics used. In one such replicative study, Bebbington et al. (1984) have only found an association between working class women, life event, and disorders. Since a different set of chronic stressors was found in the present study, there is no ground for the replication exercise with each of the vulnerability factors proposed by previous work. Findings in this study were also unable to confirm the result in Bebbington et al.'s study.

These differences in research findings might be explained by both the methodological variation and the sociocultural difference of the nature of event and stressor. The present study was believed to have a very representative, unstratified community sample with both sexes, and the multiplicative model, which is more adequate for proportional data, was applied in statistical treatment. Although the influence of culture can not be avoided, some common ground across different cultures might still be implied. Least of all, there are both acute events and chronic stressors likely to be associated with minor psychiatric morbidity in many societies. The concept of acute life events and chronic psychosocial stressors (or difficulties) is still considerably supported by empirical findings across different societies and cultures. Therefore, if the chronic stressors found in

the present study can be regarded as cultural equivalent to the vulnerability factors in Western societies, then, a different model for minor psychiatric morbidity among the Chinese in Taiwan might be proposed here. This model is that, while the individual effect of acute life event and the combined effect of such event and chronic psychosocial stressor on minor psychiatric morbidity are similar for men and women, the stronger effect of chronic stressor for women would contribute to their higher risk of such morbidity than men. One might speculate that these events/stressors interact differently with sociodemographic variables in different communities. Nonetheless, this model might still merit further testing in Western societies since findings in some Western surveys and in the present study all suggested that, while the impact of acute events is similar for men and women, that of chronic stressors is higher for women.

Since findings in the present study have suggested that the prevalence rates among different societies were largely similar, it might be further implied that the overall effect of these risk factors on minor psychiatric morbidity is also largely similar. This implication, as proposed by Wing (1976) and Burvill (1982)[p.31-33], is believed to be well supported.

(6) Explanation 5: sex difference in outcome

So far as the findings from the main study and the crosscultural comparison of them with that in Western surveys have implied, there is a female excess in the prevalence rate of minor psychiatric morbidity, as well as an association between such morbidity and culture-specific chronic psychosocial stressors (difficulties) in certain Chinese and Western societies. Since the female excess of such morbidity was not found in other non-Western societies (e.g., Leighton et al. 1963;

Carstairs, 1975; Orley & Wing, 1979), a sociocultural explanation for this controversy might well be implicated, i.e., different societies might have different impact of social risk factors on the two sexes. Although an explanatory model based on the association between the stronger effect of chronic stressors and the female excess in morbidity has been proposed for certain societies, the nature of this association still needs further exploration. It might be a causal relationship, indicating that the stronger effect of chronic stressor has yielded a higher incidence of minor psychiatric morbidity in women. On the other hand, the effect of chronic stressor might be on the course, rather than the incidence of such morbidity in women, i.e., female cases with such stressor were more difficult to get recovery. There is still a third possibility that the effect of chronic stressor has not only increased the incidence, but also prolonged the duration of disorder in women.

Since most community surveys on minor psychiatric morbidity have been cross-sectional with prevalence as the morbidity index, they were unable to examine these speculations. The conduct of the small-scale one-year prospective study in the present survey is believed to have provided some evidence for this inquiry. Findings in this study have indicated that the one-year outcome in male cases was significantly better than female cases, which is in accordance with the long-lasting effect of the chronic stressors. Furthermore, the relative difference of the recovery rates between the four age/sex groups has also implied that such chronicity is mainly among the older female cases. That the highest recovery rate was found among the young male cases was similar to the findings in a one-month follow up study in Camberwell (Tennant et al. 1981). In a similar one-year outcome study, Jenkins (1985) has also found a better recovery rate in men (54.5%) as compared with the

rate in women (45.9%). Since both surveys have used the same research method (two-stage case finding) and the same case finding instrument and case definition (the Clinical Interview Schedule), the speculation for the poor outcome of female cases has been further supported cross-culturally.

The evidence, therefore, indicated that the female excess in minor psychiatric morbidity might have been at least partly due to the effect of chronic stressors on the course of illness. Whether this effect has also on the incidence ratio between the two sexes will need further investigations.

c) Unemployment and minor psychiatric morbidity: the Chinese case in Taiwan

Although previous work has generally revealed an association between unemployment and the risk of minor psychiatric morbidity for both sexes, an interactive effect of sex and unemployment was found in the present study. It is quite obvious that the effect of unemployment was mainly for men. The protective effect of job on women, as suggested by researchers like Mostow & Newberry (1975), Brown & Harris (1978), Tennant et al. (1982) and many others, was not found here. Conversely, women with job were observed in this study to have a higher risk of morbidity than their unemployed counterparts. The similar high risk of morbidity for unemployed men found in both Western and Chinese societies might be well explained by the similar instrumental role they occupied. Empirical findings have supported this notion: life events with regard to job were significantly associated with morbidity in men but not in women. The significance of the stress of physical illness, as reported by men, was found to have largely involved a deep concern about their family income (They

worried that they were unable, or might not be able to work). The same stress for women, on the other hand, was mainly related to the influence of physical illness on their function of childcare and housekeeping (the nurturant role).

The failure in finding a protective effect of job on the psychological well-being of women in Taiwan might be due to the different sociocultural expectation for women about job, as well as the different socioeconomic role between the two sexes. Women in Taiwan traditionally do not take the responsibility of money earning. Most of them identified themselves with the role of housewife as the society has expected of them. Although in recent years the proportion of employed women has considerably increased, their economic role was mainly supplementary for the family. In some instances, they have to work because the principal earner was either illed, or not there, or his income was not enough for the family living. The evidence is clear: The stress of job was found to be significantly associated with disorder for both sexes. Moreover, nearly all of the employed women dissatisfied with their job reported that they were forced to work out of economic necessity. The proportion of them in the lower S.E.S. group was significantly higher than that in the upper. Since most of the employed women still performed their domestic work, an additional outdoor job with stress would presumably increase the risk of morbidity for them. The finding that the risk of disorder for employed women was about 1.4 times that for the unemployed might be explained in this way.

Nevertheless, the impact of personal choice for work or domestic duties on women's psychological well-being, suggested by Tennant et al. (1982), has gained its support from the present study. Women who choose to work voluntarily (without economic pressure) were generally

satisfied with their job, and the risk of morbidity for them was significantly lower than that for those who were forced to work. Moreover, the proportion of the satisfied among the upper S.E.S. group was significantly higher than that among the lower S.E.S. group.

As with S.E.S., the interactive effect of employment status and sex found in the first linear modelling has disappeared in the second modelling which has included the variables of event and stressor. It might imply that this interactive effect on morbidity has been included in the effects of event and stressor. Take the unemployed men for example, all the cases in this group have developed psychological symptoms within six months after they had been out of job or retired. Hence, unemployment has been recorded as acute event for them.

Crosscultural comparison has thus indicated that, while the stress of unemployment and its association with psychological illness is similar between Western and Chinese societies for men, such stress and its effect on psychological well-being is higher for Western women because of their stronger need for economic independence than their Chinese counterparts. The lack of significant association between unemployment and disorder in women has therefore limited the extent of support to hypothesis 5 from findings in the present study.

CONCLUSIONS AND IMPLICATIONS FOR FURTHER RESEARCH

The present study represented a well designed, large-scale epidemiological survey of minor psychiatric morbidity in rural, suburban, and urban communities carefully selected in Taiwan. With the attempt of crosscultural comparison on morbidity pattern and symptom manifestation, as well as on the associations between such morbidity and a number of sociocultural factors more frequently

investigated hitherto, this study has applied similar case finding method and case definition developed by one of the British schools. The crosscultural reliability of the case finding instrument is believed to have been well taken care of, and the validity of the screening instrument, as well as the representativeness of the samples on a number of demographic variables have been found to be quite satisfactory. By means of case-control study design, the statistical treatment and data presentation is considered to be adequate for the hypotheses testing.

With such a methodological sophistication, findings in the present study are generally compatible with the five hypotheses. Nonetheless, some modifications and further elaborations on these hypotheses have also been made. It appears that the overall prevalence of minor psychiatric morbidity and the basic neurotic symptoms are largely similar irrespective of the differences in ethnicity, culture, and community with different degree of urbanisation. The patterns and manifestations of these symptoms are considerably different crossculturally. However, such difference as the present study has revealed between Western and Chinese cases is not what has been emphasised over the years with the concept of "somatisation". What seems to be responsible for this misleading concept has been found to be the psycholinguistic problem and illness behavior of the Chinese cases. Furthermore, differential rates of both anxiety and depression symptoms between the Chinese and the Western are found. A sociocultural explanation based on the characteristic parent-child kinship of the Chinese family has been proposed for these differences.

The present study, being cross-sectional, is unable to examine the effect of urbanisation through historical comparison of morbidity.

Longitudinal studies in selected rural communities of developing countries will provide more convincing evidence to serve this purpose. Since there is a lack of valid information about the prevalence as well as patterns and manifestations of minor psychiatric morbidity in many other non-Western societies, well-conducted community studies with reliable, crossculturally comparable case finding instruments in these societies will be expected to obtain such information for a better understanding of the whole picture of such morbidity in human society.

With regard to the sex difference in minor psychiatric morbidity, findings in this study have provided support to hypotheses 4 that there is a female preponderance in such morbidity which is associated with the female role stress, and that such stressors for the Chinese women will be different from those of their Western counterparts. However, the discovery of interactions between age, sex, acute life event, and chronic stressors on the risk of morbidity has further implied that this female excess in morbidity is mainly derived from the higher impact of chronic stressors in women. Moreover, findings from the longitudinal study have suggested that such impact is not only on the genesis, but also on the course of the illness.

The effects of certain sociocultural risk factors, such as marital disruption and the single marital status of older men and women, were unable to be investigated because of the limited number of respondents with them. Further studies with sample stratification technique will be able to accomplish these tasks. Since a number of sociocultural risk factors (such as the stressors) and clinical data (such as the onset of illness) have been inquired retrospectively, the influence of memory defect on their accuracy is difficult to be avoided. Prospective studies in the future with more frequent visits

and closer observation will be informative to elucidate the natural history of minor psychiatric morbidity and the nature of the relationship between such morbidity and psychosocial stressors, as well as personality and coping behaviour. The stress model being elaborated in the present study will also be examined more precisely.

Although the present study has mainly concentrated on socio-cultural aspects of minor psychiatric morbidity, it must be emphasised here that no attempt has ever been made to exclude the importance of constitutional factors. In fact, the clarification of sociocultural influence will bring about a more accurate evaluation about the relative importance of both constitutional and sociocultural factors in such morbidity.

The evidence obtained in the present study also supports the last hypothesis that there is an association between unemployment and minor psychiatric morbidity among the Chinese in Taiwan, but such an association is only found in men and not in women. Differences both in female social role and in family economic structure between Western and Chinese societies have been presented to explain the disparity.

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APPENDIX 1

The back translated 30-item G.H.Q.

Recently, have you been:

1. Able to concentrate on what you are doing?
2. Too worried to sleep well?
3. Often restless at nights, and troubled by it?
4. Always able to find something to do, so as not to be bored?
5. Out as often as usual?
6. Able to do just as well as anyone else in your place?
7. Feeling that in general you handle things satisfactorily?
8. Satisfied with the ways you do your job?
9. Able to express warmth and intimacy towards those close to you?
10. Feeling that you get along well with others?
11. Taking much time to chat with others?
12. Feeling that you play an useful role in all aspects?
13. Feeling that you are able to make decisions on all matters?
14. Feeling that there is some pressure on you?
15. Feeling not able to get over your problems?
16. Feeling that life is a strenuous competition?
17. Able to like your daily routines?
18. Feeling that things are difficult to bear?
19. Constantly, for no reason at all, having fears or panicking?
20. Able to face your problems bravely?
21. Finding everything troublesome?
22. Unhappy and depressed?
23. Lacking confidence in yourself?
24. Feeling yourself to be a useless person?
25. Feeling there is no hope in life?

26. Feeling that your future is full of hope?

27. Feeling that, on the whole, you are happy and contented?

28. Feeling restless and tense?

29. Feeling that life is rather pointless?

30. Finding that your nerves are too weak to do anything?

APPENDIX 2

The newly designed 30 items of the CHQ

Have you recently:

1. Been suffering from headache or pressure in your head?
2. Been feeling giddy?
3. Had palpitations and worried that you might have heart trouble?
4. Been suffering from aches or pains in any part of your body?
5. Had trouble with your breathing?
6. Had cold sweats?
7. Had discomfort or a feeling of pressure in your chest?
8. Been having "huo-chi-Da" (internal fire-up)?
9. Been feeling generally weak or tired out?
10. Been suffering from gastralgia, indigestion, constipation, abdominal fullness, or diarrhea?
11. Suffered from shaking or numbness of the limbs?
12. Been normal in your sexual function?
13. Had a good appetite?
14. Been in need of a tonic?
15. Been having a good memory?
16. Been able to find yourself clear-headed and able to avoid having unwanted or non-sense thoughts?
17. Been feeling that all parts of your body are working well?
18. Been feeling that your working efficiency is as good as before?
19. Been worried about your family or close friends?
20. Been full of energy when you wake up in the morning?
21. Been interested in your usual leisure activities?
22. Been feeling that others understand and trust you?
23. Been able to talk to people at social gatherings without feeling tense?

24. Been feeling that your family and those close to you care about you?

25. Been able to get on well with your family or friends without any tension or anxiety?

26. Been feeling unable to relax or irritable over trivialities?

27. Been able to be free from self-blame when anything goes wrong?

28. Been feeling that others are respecting you and valuing you as a useful person?

29. Been worrying that others might have felt that something was wrong with you and pay attention to you?

30. Been able to control your temperament in family or social settings?

APPENDIX 3

THE BACK-TRANSLATION OF THE CLINICAL INTERVIEW SCHEDULE WITH SOME MODIFICATIONS FOR ITS CHINESE VERSION

*items modified or newly designed

Part A: REPORTED SYMPTOMS

*Ask all who had reported any physical discomfort in SECTION I GENERAL HEALTH INQUIRY which was suspected to involve psychological mechanisms as follows: (repeat for each physical discomfort)

(a) How long have you had this symptom?

*(b) Did it occur more often or become worse when you were in a bad mood? Or when you feel unable to relax yourself?

(c) How much does it disturb you?

(d) How many times did it occur in the past week?

SOMATIC SYMPTOMS 4 3 2 1 0

All respondents

(a) On the whole, are you worried about your state of health?

(b) Would you often concerned about your own state of health, or the functions of various parts of your body?

*(c) Have you ever worried that you might have any serious illness, such as cancer? or heart disease?

*(d) Have you often visited doctors or taken drugs for the illness that you worried a lot?

(If the assessor thinks it is necessary, he can do here the assessment for Part B).

OVER-CONCERN ABOUT BODILY FUNCTIONS 4 3 2 1 0

Have you noticed that you tire easily?

or felt you seem to lack energy?

If the respondent's answer indicates excessive fatigue or lethargy, continue with the following questions:

When did you start to notice this phenomenon? (How long has it been since you discovered it?)
* - has it been related to physical illness/pregnancy/old age?

Do you feel tired all the time, or just some of the time?

What makes you feel tired most?
* - Do you feel tired even without doing anything?
or just do something trivial?

* - Do you feel tired as well when you are worrying?

Do you feel completely exhausted in the evening?

How have you been doing this week?

- Has tiredness stopped you from doing anything you wanted to do?

FATIGUE 4 3 2 1 0

How have you been sleeping?

If the answer indicates difficulty with sleep, pursue with the following questions:

Has it been difficult for you to fall asleep?

Do you become restless at night?

Do you wake up too early in the morning?

Did you lose any sleep in the past week?

If the respondent's answer indicates loss of sleep in the past week, continue with the following questions:

How long have you had insomnia?

Do you know why you are not able to sleep?
* - Would you worry about trivialities, or turning around in bed?

How many nights in the past week have you not been able to sleep?

In a night of serious insomnia, how many hours of sleep would you lose?
* - As compared with the amount you usually need?

POOR SLEEP 4 3 2 1 0

Do you take any sleeping pills?

If the answer is YES, continue:

*Did you get them from a doctor or pharmacist?

Do you know their names?

Do you use them every night or just occasionally?

How many times have you taken them in the past week?

HYPNOTICS 2 1 0

Do you find yourself easily irritated or get moody by the people or things around you?
* - have you had a bad temper?

If the answer indicates respondent easily irritable, continue:

How long have you been like this?

Have you always been like this or just sometimes?

What kind of things put you into a bad mood?

How has it been in the last week?

Have you had a bad temper or quarrelled with anyone in the past week?
* - With whom?

Are you still feeling uneasy?
* - Do you feel upset about your being irritable?

IRRITABILITY 4 3 2 1 0

Do you find it hard to concentrate?

Do you tend to make a mess of things or keep forgetting things?

If the answer indicates a problem, continue:

How long has it been since you discovered this problem?

Do you have this problem all the time? or just occasionally?

What difficulties does it cause you?

- at home?

* - or at work/reading?

Can you concentrate to read a newspaper or watch a television programme?

How bad has it been in the past week?

- making it impossible for you to do anything?

- How many of your activities are affected by it?

*Do you feel rather upset for your poor memory/concentration?

LACK OF CONCENTRATION 4 3 2 1 0

How has your mood been in the past week?

Have you ever felt sad or gloomy?
* - How long has it lasted?

If the answer indicates sadness or melancholy, continue:

Do you feel dejected all the time, or just occasionally?
* - Does it lasted for several days?

*Has it just happened recently, or has it ever occurred before?

Does it seem to be related to something that has happened?
* - What is that? When has it happened?

How bad is it?
* - have you felt that you do not want to do anything?
* - How is your appetite? Has your body weight been decreased?

Have you wept?

Can you get rid of it?

Do you sometimes have a feeling of hopelessness?

Have you ever felt that you are better off dead?

DEPRESSION 4 3 2 1 0

If necessary, continue with the following questions, to assess "depressive thoughts" in Part B.

Have you ever blamed yourself because of this?

*Do you ever feel that you have a hard lot?
* - Or that everything bad has been predestined?

*Do you ever find yourself feeling shameful, or feel that you have lost your face?

*Do you ever blame yourself for having made any mistake?

*Do you sometimes feel that you can not compare others?

How do you feel about the future?

DEPRESSIVE THOUGHTS 4 3 2 1 0

Do you think yourself a nervous person?
* - Or that it is often not easy for you to be relaxed?

*Have you ever found yourself anxious, uneasy, apprehensive, or panicking for no good reason?
* - How long does it last?
* - Do you have it in the past week?

Do you worry about things? To what extent?
* - How long does it last?
* - Do you have it in the past week?

If patient's answer indicates anxiety and worry, continue:

*Do you have any idea why you feel anxious/tense/apprehensive/panic?

What do you mainly worry about?
* - When did it happen? (Or, how long have you worried about it?)

Have you always been like this or has it started just lately?
* - How long has it been like this?

Do you worry all the time, or just occasionally?
* - Is the time you worry longer than that you feel easy in average?

*Do you find yourself worrying more than you need about trivialities?

*Have you been very upset and unable to relax yourself by worries in the past week?

ANXIETY 4 3 2 1 0

Is there any situation or particular thing that frightens you or makes you feel uneasy?

How is it when you are alone at home?
- out by yourself?
- riding in a bus or train?

- animals? insects? height? darkness?

If respondent's answer indicates there is fear, continue:

How bad is it?

Do you always feel it, or just sometimes?

How bad has it been in the past week?

Do you have to cancel some activities or change your daily routine to avoid it?

PHOBIA 4 3 2 1 0

Have you ever found yourself compelled to do something repeatedly to ensure that it is done properly?

Or some unpleasant thought occurring repeatedly and you are unable to drive it away? (If the patient asks what this means: Ask if some unpleasant thought would keep entering your head against your will).

Do you find it hard to make a decision?

If respondent's answer indicates a possibility of obsessional thinking or behaviour, choose appropriate questions from the following to continue:

Checking

For how many times do you find yourself repeatedly checking your work?

Do you check again even when you know the work is properly done?

Is there anything else that you must do again and again?

Unpleasant thoughts

Can you describe them in more detail?

Indecision

Is this a phenomenon that is always with you, or has it just occurred recently?

Does it happen only with important matters or with small matters as well?

All phenomena

Have you ever tried to resist it?

Do you suffer from it?

Does it take up a lot of your time?

How has it been in the past week?

OBSESSIONAL THINKING & BEHAVIOUR 4 3 2 1 0

Have you ever felt that you don't really exist? or felt that everything around you doesn't seem to be real?

If the answer indicates loss of sense of self, continue:

Can you describe the feeling?

Does it bother or scare you?

Do you have this feeling everyday or just occasionally?

How long does it last when it happens?

How bad was it the last time it happened? (In the past week)

DEPERSONALISATION 4 3 2 1 0

Is there anything else to do with your health that you think is important?
- or anything I have not asked?

END OF SECTION II

APPENDIX 4

1982 TAIWAN GENERAL HEALTH SURVEY

ID code _____

Name: _____

Date of interview: _____

Time interview started: _____

Candidate for CIS interview: ____0) No ____1) Yes

Age: _____ (Date of birth: _____)

Sex:____1) Male ____2) Female

SECTION I GENERAL HEALTH INQUIRY

1. Ask all

   We would like to know your recent physical health. During the last week, would you say your health had been .....(read out) as compared with how you usually feel?

   __1) better than usual __2) about the same __3) worse than usual

2. (a) During the last week which ended on....(specify the date), did you have....? (read out)

   (b) If YES to any item: How was it (any particular bout or attack) like? Did it start in the past week, or did it start before? Since when?

   If NO to all items, go to SECTION II

	YES	NO	TIME OF ONSET
A common cold	A	0	
Headache	A	0	
Dizziness/faintness	A	0	
Tinnitus	A	0	
Gastralgia/hunger pain/nausea/tarry stool	A	0	
Indigestion/abdominal fullness/anorexia	A	0	
Diarrhea/Constipation	A	0	
Breathlessness/Asthma	A	0	
Chest pain/tightness	A	0	
Bronchitis/Pneumonia/Pulmonary Tuberculosis	A	0	
Palpitation/heart condition	A	0	
Hypertension	A	0	
Muscle aches/lumbago/backache	A	0	
Joint pain/Rheumatism	A	0	
Cold sweating	A	0	
Dryness of mouth/Huo-Chi-Da	A	0	
Tremor/numbness of limbs	A	0	

	YES	NO	TIME OF ONSET
Frequent urination/renal condition	A	0	
Shen-K'uei (content:_____)	A	0	
Undue tiredness	A	0	
Poor memory/concentration	A	0	
Insomnia	A	0	
Shin-chin-shui-jo (content:_____)	A	0	
Diabetes	A	0	
Hypertension	A	0	
Malignancy	A	0	
Epilepsy	A	0	
Stroke	A	0	
Thyroid condition	A	0	
Anemia/hematological condition	A	0	
Skin troubles	A	0	
Liver condition	A	0	
Dental problem	A	0	
Eye troubles	A	0	
troubles of ear, nasopharynx, or throat	A	0	
Dysmenorrhea/infertility/abortion (females)	A	0	
Pregnancy (females)	A	0	
Disabling	A	0	
Accident	A	0	
Others	A	0	
problems/worries(personal/within the family) (Contents:_____)	A	0	

Guideline for TIME OF ONSET:

0) No; 1) in the past week;
2) 1 week to 1 month before; 3) 1 to 3 months before;
4) 3 to 6 months before; 5) 6 months to 1 year before;
6) 1 to 2 years before; 7) 3 to 4 years before;
8) 5 to 10 years before; 9) more than 10 years before;

3. ASK THOSE WITH ANY ILLNESS/CONDITION

Have you visited doctor or looked for any help because of the trouble/illness that you have just mentioned? What sort of measure(s) is it (are they) ? (read out each of the following)

__0) none __1) western doctors __2) Western pharmacy
__3) herbs __4) Chinese doctors __5) Shaman/pray in the temple
__6) priest __7) fortune teller __8) others:_____
(multiple choice is allowed)

If NONE: Why didn't you ask for any help?

__0) Not applicable; __1) Not serious, let it be;
__2) Too busy to have time for help-seeking;
__3) It's an old problem, drugs do not have much help;
__4) Self-help (to take more rest or to care the diet);
__5) Lack of money for doctor visiting;
__6) Due to inconvenient transportation;
__7) Parents do not care about my trouble/illness;
__8) Others:_____

If YES:

(a) What kind of helper/drugs have you looked for/taken? for which trouble/illness?

__0) Not applicable __1) General practitioner
__2) Pharmacy __3) Brain specialist
__4) other specialist __5) Chinese doctor
__6) herbs __7) Shaman/temple praying
__8) priest/father __9) others:_____

(b) When did you first look for/take it (them)?

__0) Not applicable __1) in the past week
__2) in the past one month __3) in the past 6 months
__4) in the past year __5) within 1 to 2 years
__6) within 3 to 4 years __7) 5 years ago
__8) 10 years ago

(c) Did it (them) help your discomfort?

__0) not applicable __1) a lot __2) some __3) not at all

If No help:

(d) Have you looked for another helper/drugs? (repeat question [a])

If helpful:

(e) Do you still visit him (helper)/take it (drug)?

(f) Have you looked for more than one helper/taken more than one drugs at the same time?

END OF SECTION I, MOVE TO SECTION II

SECTION II GENERAL INFORMATIONS

1. Ask all

(a) May I just ask, are you the head of the household?

__0) No __1) Yes

(b) Who is the principal earner of the family?

__1) respondent __2) others:_____

2. Are you working at present?

__1) yes __2) unemployed __3) retired
__4) housewife __5) student __6) others:_____

If YES, go to question 3

If NOT working, go to question 4

3. What is your occupation? (If temporary not working, retired, or housewife, ask for last main employment)

Name/title of job _____

Description of activity _____

Skill/training/qualification/experiences required for job

_____

Supervision/management responsibilities (including no. of people supervised) _____

Industry/business/profession of employer _____

No. of people employed at place of work (approximately) _____

Employment status: __employed __self-employed

4. What is the occupation of the principal earner? (If the respondent is the principal earner, go to question 5)

Name/title of job _____

Description of activity _____

Skill/training/qualifications/experiences required for job

_____

Supervision/management responsibilities including no. of people supervised) _____

Industry/business/profession (of employer) _____

No. of people employed at place of work (approx.) _____

Employment status: __ employed __ self-employed

5. Ask all

(a) What is your level of education?
__1) illiterate __2) elementary __3) junior middle
__4) Senior middle __5) college __6) post-graduate

(b) If the respondent is not the principal earner: What is the principal earner's level of education?

__ (choose one from [a])

6. Ask all: Are you married?

__1) single __2) married __3) widowed
__4) divorced __5) cohabitating __6) separated

7. Ask all housewives: How do you feel about doing housechord?

__1) willing, with no regret __2) unwilling and regretful
__3) not applicable

8. Ask women with job: How do you feel about your job?

__1) personal choice with interest
__2) unwilling, out of economic necessity __3) not applicable

9. Ask all employed men: What is your view on your job performance, job environment, and income?

__1) quite satisfied __2) somewhat satisfied
__3) somewhat dissatisfied __4) quite dissatisfied
__5) not applicable

10. Ask all currently/previously married

Do you have children under the age of 15? How many?

__0) none __1) one __2) two
__3) three __4) more than three __5) not applicable

11. Check the respondent's family structure

__1) single __2) nuclear family
__3) three generations __4) four generations

12. Ask all currently/previously married women

Do you live with your mother- or daughter-in-law?

__0) no __1) with mother-in-law
__2) with daughter-in-law __3) not applicable

13. Ask all currently married respondents:

How do you feel about your marriage?

__1) quite satisfied __2) somewhat satisfied
__3) somewhat dissatisfied __4) quite dissatisfied
__5) not applicable

14. Ask all: Have you ever visited a brain specialist/psychiatrist?

__0) never __1) visited before __2) currently visiting

15. Ask all: How long have you or your family been living here?

__1) generations __2) over 10 years __3) 5 to 10 years
__4) 2 to 5 years __5) 1 to 2 years __6) less than 1 year

FOR OFFICE USE ONLY

1. The S.E.S. of respondent:

__1) Professional/administrative __2) Semi-professional/mamagerial
__3) Non-manual skilled worker __4) Manual skilled worker
__5) Semi-skilled worker __6) Unskilled worker

2. Do you consider the respondent to be....

__1) very intelligent
__2) fairly intelligent
__3) about average intelligence
__4) slightly below average intelligence
__5) well below average intelligence

3. Do you consider the hearing capacity of the respondent to be...

__1) above average __2) average
__3) moderately diminished __4) very diminished

4. No. of calls made to obtain interview: _____

5. If the respondent refused the interview, describe the reason:

_____

6. Time used for the interview: _____minutes

END OF SECTION II, NOW HAND CHQ TO THE RESPONDENT

APPENDIX 5

Psychosocial Stressor Inventory

In many instances, physical discomforts are closely associated with life pressure and emotional stress. Therefore, we would like to know whether there is anything like this for you.

1. Ask cases only: (repeat for each event/difficulty)

   a) About the event/difficulty you have just mentioned (read out what the case has reported during the CIS interview), can you tell me when did it (event) happen?
   Or, how long has it (difficulty) troubled you?

   b) How much did it upset you?

   __1) very stressful __2) rather stressful __3) mildly stressful

   c) Did you feel anxious/depressed...[read out what symptom(s) the case has reported] before it happened?

   d) Is it still upsetting you now?

   e) Was there any other event (difficulty) happened (existed) at the same time related to your...(read out the following areas of life)?

__00) economy	__01) job
__02) academy	__03) affection/marriage
__04) interpersonal relations	__05) children
__06) parents	__07) marital life
__08) spouse	__09) brothers/sisters
__10) mother-/daughter-in-law	__11) personal physical health
__12) legal problem	__13) housing
__14) family properties	__15) other close relatives
__16) others, specify:_____	

If the case reported any other event/difficulty, repeat questions a) to d)

2. Ask noncase only

   a) Was there any event/difficulty happened/existed in the past six months related to your...[read out items listed in 1 a)]?

   b) Can you tell me when exactly did it (event) happen?
   Or, how long has it (difficulty) troubled you?

   c) How much did it upset you?

   __1) very stressful __2) rather stressful __3) mildly stressful

Event	Degree of stress	Time of onset	pre- or postmorbid	Still upset or not
1				
2				
3				
4				
5				

Difficulty	Degree of stress	Duration	Pre- or postmorbid	Still upset or not
1				
2				
3				
4				
5				

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PRELIMINARY COMMUNICATION

A pilot study of mental disorders in Taiwan

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SYNOPSIS A two-stage case-identification method, using a modified General Health Questionnaire (GHQ) and the Clinical Interview Schedule (CIS), was applied in a pilot study of mental disorders in an urban city in Taiwan. The validity of the modified GHQ was proved to be greater than that of the original, with a very high sensitivity and specificity The Chinese version of the CIS was found to be feasible for community study in Taiwan The total prevalence rate of all mental disorders was 26 0%, with a higher morbidity among females

INTRODUCTION

Since the introduction of the standardized psychiatric interview schedule and the two-stage case-finding strategy (Blum, 1962, Wilson & Jungner, 1968, Goldberg, 1972), the problems encountered in psychiatric community surveys carried out before 1970 have been tackled with considerable improvement The two-stage strategy has decreased the cost of time, money, and manpower which previous large-scale community psychiatric surveys often incurred, since it has enabled the psychiatrist to conduct standardized psychiatric interviews on only a small ubsample of the first-stage respondents Thus, the pattern of distribution of cases and individual symptoms, as well as the correlation between these and various bio-psychosocial variables, can more easily be investigated

A number of well-established clinical interview schedules, such as the Clinical Interview Schedule (CIS) (Goldberg *et al* 1970), the Present State Examination (PSE) (Wing *et al* 1974), the Psychiatric Epidemiology Research Interview (PERI) (Dohrenwend *et al* 1980), and the Diagnostic Interview Schedule (DIS) (Robins *et al* 1981), have all claimed to be reliable and feasible for use in community surveys Nonetheless, the recent debate between different workers concerning different instruments (Dohrenwend *et al* 1978, Spitzer *et al.* 1980, Bebbington *et al* 1980, Williams *et al.* 1980*a*) indicates the existence of problems in case-definition and also classification, especially with reference to the minor psychiatric disorders (Shepherd, 1977, Williams *et al* 1980*b*)

These problems become more severe when psychiatric community surveys are to be conducted in developing countries Here two additional difficulties emerge differences between these and Western cultures, and the lack of culture-specific reliable and valid instruments developed by investigators from a particular culture The first difficulty relates to the cross-cultural comparability of symptoms, 'caseness', and diagnostic nosology Since the cross-cultural study of minor psychiatric disorders, unlike that of psychotic disorders, has been relatively neglected, community studies of these disorders using valid, reliable, and comparable instruments in non-Western countries are needed The present survey tries to achieve this goal. It is a community survey aiming at investigating morbid rates of various psychiatric symptoms and syndromes and their distribution, and comparing these findings with those found in surveys in Western countries

The survey reported in this paper is a pilot study The aims were to develop a set of two-stage case-finding instruments for use in the main survey, to obtain preliminary prevalence data for the estimation of sample size for the main survey,

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and to assess how to overcome the shortcomings (such as the lack of a standardized psychiatric interview and a well-assessed questionnaire) of the previous community surveys carried out in Taiwan (Lin, 1953, Rin *et al* 1966, Lin *et al* 1969)

METHODS

Sample

The Sun-Ming District of Kaohsiung was chosen as the community for the pilot survey Kaohsiung is the second largest city in Taiwan, with a population of 1249723 at the end of January 1982 It has undergone rapid urbanization in the past 15 years and has become the largest industrial city The Sun-Ming District has the largest population of all the districts of Kaohsiung, being 249344 at the time of the investigation There were two reasons for choosing this district (1) The Sun-Ming District is a newly developed area, containing different ecological compositions with some fairly urbanized regions surrounding the railway station, some suburbs, and a few farms Such variation would be suitable for the validity study of the screening instrument and the testing of the feasibility of the Chinese version of the CIS (2) Good transportation facilities are available

Sun-Ming District contains 73 *Lis*, an administrative area of the district, each Li is further divided into several *Lings* There was a total of 1368 Lings at the time of the investigation Population statistics (August 1982) obtained from the district office yielded the size of different age and sex groups with each Li and Ling They also provided the name, age and sex of each inhabitant in every household, and their relationships The multi-stage random sampling process, with probability proportional to size, was applied to the data In the first stage, 10 Lis were selected and the sample size within each of them was decided One third of the Lings in each selected Li were then chosen and, finally, the sample size within each Ling was decided

The construct of the sample frame

The sample frame consisted in all persons over 15 years of age in each selected Ling and the sample, which included 80 males and 70 females, was selected from it. The civ serv h selected Ling was asked to carry out a home visit with the research assistant (Miss S T Lin) The civil servant was familiar with the condition of the households The lists of demographic information of the households were corrected according to the actual condition observed during the home visit Those residents who did not have their names on the census record were entered into the lists, and those who had left home for the time being (excluding temporary leave) but still had their names on the census records were removed from the lists The final lists therefore contained only those who were resident during the period of investigation

Another sample group was obtained from a community mental health centre in Kaohsiung 150 consecutive attenders between 1 August 1982 and 31 March 1983, who had never previously sought psychiatric help, were included in this group for comparative study

The preparation of the case-finding instruments

Chinese Health Questionnaire (CHQ) – the first-stage tool

The GHQ developed by Goldberg (1972) has been widely used in a number of surveys in Western countries (Goldberg *et al* 1976, Muñoz *et al* 1978, Tennant, 1977, Duncan-Jones & Henderson, 1978, Tarnopolsky *et al* 1979) It was chosen as the questionnaire to be modified for use as the first-stage instrument Some research workers have found that the screening questionnaire had to be reassessed when used in different sociocultural settings (Tarnopolsky *et al* 1979) Some have suggested further that it has to be re-designed in non-Western countries and that its validity be re-tested in the community intended for study (Carstairs, 1975, Verma & Wig, 1977) In view of the obvious cultural differences between China and the West, and the interest of comparative study of the GHQ between Western and Chinese communities, an experimental Chinese Health Questionnaire (CHQ) was designed as follows First, the original 30 items of the GHQ were translated Then a further set of 30 items was designed by the investigator to reflect the Chinese way of expressing their emotional difficulties The philosophical concept of 'optimal health' in Chinese is a state of 'balance' between man and environment, between man and other people, as well as

between all parts of man's internal organs· hence, the Chinese concern about the temperature of their food, and about the relationship between them and their families and friends When they feel that these 'balances' are threatened and/or broken, emotional distress begins to emerge Somatization and somatic concern were thus reported to be the characteristics of neurotic disorders among the Chinese (Tseng, 1975, Kleinman, 1975, Lin, 1982) Half the new items were related to these phenomena. they included questions concerning various somatic disorders, such as headache, giddiness, palpitation, aches and pains in the body and limbs, respiratory complaints, poor concentration and memory, cold sweating, precordial discomfort, gastro-intestinal discomforts, shaking and/or numbness of limbs, fatigue, feelings of high *huo-chi* (internal fire) etc Other questions related to their concern about the well-being of their families, and their relationship with them and close friends The original GHQ-30 and these new 30 items made up the experimental CHQ Table 1 lists some of the new CHQ items

Table 1 *Some new CHQ items*

Have you recently	
31	Been suffering from headache or pressure in your head?
33	Had palpitations and worried that you might have heart trouble?
38	Been having high *huo-chi* (internal fire)?
41	Suffered from shaking or numbness of the limbs?
45	Been having a good memory?
49	Been worried about your family or close friends?
54	Been feeling that your family and those close to you care about you?
55	Been able to get on well with your family or friends?
58	Been feeling that others are respecting you and valuing you properly?
60	Been able to control your temperament in family or social settings?

Chinese version of the CIS – the second-stage tool

The CIS (Goldberg *et al* 1970) was chosen as the second-stage interview schedule. Two reasons accounted for this choice First, the CIS and the GHQ were originally designed by the same research workers with the same purpose, the community study of mental disorders, and with the same concept of 'caseness' (Williams *et al* 1980*b*). Secondly, the investigator had carried out a reliability study with two British senior psychiatrists on a number of British community respondents The result was satisfactory, with 100% agreement on 'case'/'non-case' judgement, and Kappa values on the presence/absence of each symptom of the CIS ranging from 0 7 to 1 0 (Cheng *et al.* 1983)

Inventory on general health and help-seeking behaviour

An inventory was constructed enquiring about the respondents' recent physical condition, their help-seeking behaviour, and sociodemographic data The help-seeking behaviour and its correlation with the physical and mental condition will be reported in a separate paper (Cheng, 1985*a*)

The field work

The field work was carried out from 4 November 1982 to 6 April 1983 Each of the sample subjects was first contacted by the research assistant and the local civil servant during a home visit. They were asked whether they would accept a health visit by a doctor If the subject agreed, then an appointment was made Those who refused the health visit were identified as *non-respondents*

The field interview began with a simple physical check-up The inventory on general health and help-seeking behaviour was then administered by the research assistant The respondent was next asked to complete the CHQ Then, the investigator conducted the CIS interview without knowledge of the score on the CHQ Finally, the sociodemographic data were collected by the assistant Some additional information concerning the respondents' usual behaviour and interpersonal relationships was obtained from the civil servant

RESULTS

Response rate

Only four of the total sample refused the health visit A satisfactory response rate of 97 3% was thus obtained Two middle aged men and two women, one young and the other middle aged, refused the visit The young lady's occupation demanded frequent travelling abroad and she was in Japan at the time of the home visit The other three rejected the visit The civil servant played a key role in eliminating some respondents' insecurity or suspicion by his active explanation and encouragement, a strategy which was

derived from the previous community surveys by Lin (Lin, 1953, Lin *et al* 1969)

The 150 respondents from the community mental health centre were interviewed by the same procedure None of them refused the interview The investigator was a consultant of that centre during the survey period The interviews were completed during the same period as that of the community survey.

Characteristics of the samples

The age and sex distribution of the community sample are shown in Table 2, which also presents a comparison with the corresponding data for the Kaohsiung and national population for all those over 15 years of age at the 1982 census There were no significant differences between the respondents and the Kaohsiung and national population for both the sex and age distributions

Table 2 *Age and sex distribution of community respondents compared with the* 1982 *census*

	Community (%)		Kaohsiung (%)		National (%)	
Age group	Male	Female	Male	Female	Male	Female
15–24	21 8	23 5	29 3	30 9	31 0	32 5
25–34	28 2	36 8	27 6	30 5	24 5	25 7
35–44	25 6	19 1	15 9	16 3	14 1	14 8
34–54	12 8	10 3	13 5	11 1	13 9	12 2
55–64	7 7	4 4	9 5	6 7	10 4	8 1
65+	3 9	5 9	4 2	4 6	6 2	6 7

For community/Kaohsiung
males, $\chi^2 = 3\ 12$, df = 5 NS,
females, $\chi^2 = 2\ 72$, df = 5, NS
For community/national census
males, $\chi^2 = 3\ 12$, df = 5, NS
females, $\chi^2 = 4\ 08$, df = 5, NS

Table 3 *Comparison of community respondents with* 1982 *census. marital status*

	Community (%)		Kaohsiung (%)		National (%)	
Marital status	Male	Female	Male	Female	Male	Female
Single	29 5	27 9	39 0	30 1	40 6	30 5
Married	69 2	69 1	57 8	62 7	56 0	61 5
Others*	1 3	3 0	3 2	7 2	3 4	8 0

* Including divorced, separated, cohabitating, and widowed
For community/Kaohsiung
males, $\chi^2 = 3\ 12$ df = 2 NS,
females, $\chi^2 = 1\ 36$, df = 2, NS
For community/national census
males, $\chi^2 = 1\ 56$, df = 2, NS,
females, $\chi^2 = 1\ 36$, df = 2, NS

Table 3 presents the distribution of marital status of the community respondents, Kaohsiung and national populations There were no significant differences The socioeconomic status of the respondents was classified according to the occupation of the principal wage earner As there was no classification of socioeconomic groups and no national statistics of the groupings in Taiwan for comparison, the criteria for this classification were adopted from the British classification (OPCS, 1980). There were 18 (12 3%) professional and semi-professional, 94 (64 4%) non-manual and manual, and 34 (23 3%) semi-skilled and unskilled workers Socioeconomic status showed no significant sex differences The respondents from the community health centre included 83 males and 67 females Their age distribution did not show a significant difference from that of the community group In general, the sample proved to be reasonably representative, especially of the Kaohsiung population

Validity of the GHQ and the CHQ

Those respondents with an Overall Severity Rating (OSR) of 2 or above on the CIS were identified as 'cases' Various cut-off points of the GHQ and the CHQ scores were computed against the 'case'/'non-case' classification of the CIS, and optimal cut-off points were decided The misclassification rates, sensitivity, specificity, and correlation of both the GHQ and the CHQ with clinical status are listed in Table 4 Table 5 shows the validity coefficients for both sexes, no significant differences emerged Both the GHQ

Table 4 *Validity coefficients of the Chinese version GHQ and CHQ*

	CIS			CIS	
	Case	Non-case		Case	Non-case
GHQ (+)	28	7	CHQ (+)	34	10
GHQ (−)	10	101	CHQ (−)	4	98
Total	38	108	Total	38	108

GHQ cut-off point	= 4/5,	CHQ cut-off point	= 9/10,
Sensitivity	= 73 7%,	Sensitivity	= 89 5%,
Specificity	= 93 5%	Specificity	= 90 7%,
Overall misclassification rate	= 11 3%	Overall misclassification rate	= 8 7%,
Positive predictive value	= 80 0%.	Positive predictive value	= 77 3%

Table 5 *Validity of the CHQ for male and female respondents*

Males	CIS Case	CIS Non-case	Females	CIS Case	CIS Non-case
CHQ (+)	14	6	CHQ (+)	20	4
CHQ (−)	1	57	CHQ (−)	3	41
Total	15	63	Total	23	45

Cut-off point = 9/10

Sensitivity	= 93 3%,	Sensitivity	= 87 0%,
Specificity	= 90 5%,	Specificity	= 91 7%,
Overall misclassification rate	= 9 0%,	Overall misclassification rate	= 10 3%,
Positive predictive value	= 70 0%	Positive predictive value	= 83 3%

Table 6 *GHQ and CHQ scores (mean ± S D) by sex in community respondents*

	Sex: Male	Sex: Female
GHQ score	3 41 ± 3 99	4 32 ± 4 75
CHQ score	5 60 ± 7 02	8 23 ± 10 14
Total no	78	68

For sex comparison
GHQ $t = 1\ 24$ NS,
CHQ $t = 1\ 79$, NS

and the CHQ were found to be valid in this pilot study The mean CHQ scores (see Table 6) showed no statistically significant difference between sexes The mean GHQ and CHQ scores of community normals, 'cases', and patients from the community mental health centre are shown in Table 7 The differences between them, as analysed by ANOVA, indicate that both the CHQ and the GHQ can clearly distinguish between these groups When the mean scores of each reported symptom and manifest abnormality for respondents with high and low CHQ scores were compared, the high CHQ scorers exhibited higher mean morbid ratings on most of the items related to neurotic phenomena (Fig 1) This provides further evidence for the validity of the CHQ

Table 8 presents a comparison of validity coefficients in different community surveys the figures for both the GHQ and the CHQ are satisfactory Kendall's tau correlation coefficients between the GHQ, the CHQ and clinical status

Table 7 *GHQ and CHQ scores (mean ± S D) of community normals, cases and patients*

	Normals	Cases	Patients
GHQ score	2 07 ± 2 63	9 00 ± 4 37	14 25 ± 7 24
CHQ score	3 13 ± 3 98	17 68 ± 9 62	29 15 ± 15 37
Total no	112	38	138

ANOVA
GHQ $F = 151\ 021$, $P < 0\ 001$,
CHQ, $F = 158\ 864$, $P < 0\ 001$

indicate that the questionnaires are useful in the assessment of the severity of symptoms found in community respondents This finding differs from that reported by Tarnopolsky *et al* (1979), whose tau coefficients were significantly lower These workers explained their result by referring to the differences of morbidity found in general practice and community samples, to which they also attributed their low validity However, as Duncan-Jones has pointed out (Duncan-Jones, 1979), the time-lag between the GHQ and the validating psychiatric interview in their survey might account for the low level of the coefficients and the validity In this survey there was virtually no time lag, which may well account for the satisfactory validity

As the practical value of the CHQ would be increased by the construction of a shorter version, provided that its validity is unaffected, a discriminant function analysis was carried out The design, development and results of this analysis will be reported in a separate paper (Cheng & Williams, 1985) In brief, a stepwise variable selection method was used which yielded the 12 best items with a more satisfactory classification power (the misclassification rate being only 2 0%) Half the items come from the GHQ-30, and the rest from the new 30 items

The CIS findings

The CIS has two different kinds of ratings the score of Reported Symptoms, which takes into account only the respondents subjective description of their mental condition, and the score of Manifest Abnormalities, which comes from the psychiatrist's own judgement of the respondent's mental state

The mean scores of Reported Symptoms and Manifest Abnormalities at each level of the

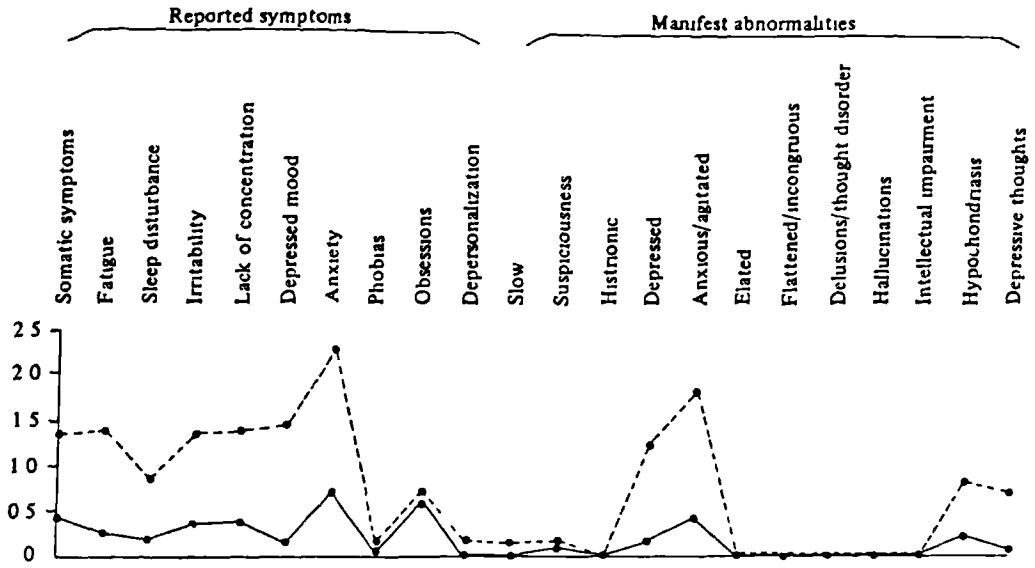

FIG 1 The average score of individual items recorded in the CIS for high and low CHQ scorers ●--● high CHQ scorers (10+) ●——● low CHQ scorers (0–9)

Table 8 *Comparison of the validity of GHQ and CHQ in different community surveys*

Author	Study	Cut-off point	Correlation with clinical status	Specificity (%)	Sensitivity (%)	Overall misclassification rate (%)
Goldberg (1972)	General practice London	4/5	+0 77*	87	91 4	11
Goldberg *et al* (1976)	General practice Philadelphia	3/4	+0 77*	79 5	85	19 1
Tarnopolsky *et al* (1979)	Community sample London	4/5	+0 45*	72	78	26
Benjamin *et al* (1982)	Community sample Manchester	11/12	+0 61†	91 5	54 6	21 7
Present survey	Community sample Kaohsiung Taiwan	4/5 (GHQ) 9/10 (CHQ)	+0 63* +0 65*	93 5 90 7	73 7 89 5	11 3 8 7

* Kendall s tau coefficient
† Spearman s correlation coefficient

Overall Severity Rating (OSR) are shown in Table 9 There is a marked difference between the means of different OSR levels for both community respondents and the community mental health centre group, as well as between the total means on the two different ratings This reflects the fact that the severity of clinical phenomena of the community respondents is significantly lower than that of the community mental health centre group The similarity of the mean scores between these two groups at each level of the OSR reflects both the consistency of the clinical judgement in different settings, and the inconsistency between the clinical severity and the decision to seek help In other words, clinical severity is not the only factor in the decision to consult a mental health worker Table 10 shows the proportions at each level of severity The community respondent group includes 26 0% of 'cases', none with marked degrees of severity The community mental health centre group includes 92% of patients, 9 3% with marked degrees of severity

The case rate in different age and sex groups is shown in Table 11 There was no significant

Table 9 *Mean CIS score at each level of OSR in community respondent group and community mental health centre (CMHC) group*

	Reported symptoms		Manifest abnormalities	
OSR level	Community respondents	CMHC group	Community respondents	CMHC group
0	1 672	2 000	0 234	0 200
1	5 136	4 429	1 932	1 714
2	11 519	12 833	4 926	5 067
3	17 091	18 391	9 273	10 484
4	0 000	21 643	0 000	13 857
Total no	146	150	146	150
Mean	5 699	15 273	2 296	7 880

Table 10 *Proportions at each level of severity in community respondent group and community mental health centre (CMHC) group*

	Community respondents		CMHC group	
OSR level	No	(%)	No	(%)
0	64	(43 8)	5	(3 3)
1	44	(30 2)	7	(4 7)
2	27	(18 5)	60	(40 0)
3	11	(7 5)	64	(42 7)
4	0	(0 0)	14	(9 3)
Total no	146		150	

difference by age among women, but two peaks were found at 25–34 and 55+ among men The overall difference between the sexes was significant ($P < 0\ 05$) The standardized case rate against the Kaohsiung population was almost the same as the unstandardized rate All the cases belonged to the category of minor psychiatric disorders, with anxiety and depression as the predominant symptoms The nature of the psychopathology and the correlation between 'caseness' and various sociodemographic variables will be presented in separate papers (Cheng, 1985*b*,*c*)

DISCUSSION

A pilot study of mental disorders in Taiwan has been presented The thoroughness of the census record and the correction of the sample frame according to the observed conditions rendered the sample frame highly accurate This, together with the almost non-existent refusal rate, has

Table 11 *Prevalence rates by age-group within sex*

Age group	No of respondents		No of cases		Unstandardized case rates	
	Male	Female	Male	Female	Male	Female
15–24	19	16	1	5	5 3	31 3
25–34	21	25	9	10	42 9	40 0
35–44	20	13	3	3	15 0	23 1
45–54	9	7	0	1	0 0	14 3
55+	9	7	2	4	22 2	57 1
Total	78	68	15	23	19 2	33 8
Standardized case rates*					18 8	33 6

* Against Kaohsiung population
males $\chi^2 = 12\ 48$, df = 4 $P < 0\ 02$,
females, $\chi^2 = 4\ 01$ df = 4 NS,
sex difference $\chi^2 = 4\ 09$ df = 1 $P < 0\ 05$
Total case rates
understandardized, 26 0%,
standardized, 25 9%

rendered the representativeness of the sample superior to that of most surveys carried out in Western countries Such thoroughness is crucial in epidemiological surveys, both for the ascertainment of prevalence and for the calibration of screening instruments

The GHQ proved to be valid in this cross-cultural study, but its validity can be further improved by adding certain culture-specific items relevant to the expression of emotional problems by the specific ethnic group under investigation, as suggested by the finding that the validity of the CHQ was superior to that of the GHQ in this study In theory and practice, the best strategy for developing screening instruments for psychiatric community surveys is to design questions specifically relevant to the specific community under survey A calibration study can then be performed on a representative sample against the psychiatrist's diagnosis, using a standardized interview schedule The strength of the questionnaire can be further developed and improved by means of discriminant function analysis (Hand, 1979), and the questionnaire should be re-calibrated when used in a different community (Tarnopolsky *et al* 1979)

The CIS was found to be feasible for the community survey in Taiwan Its first part, concerning the investigation of the respondent's physical condition, was found to be especially useful in making a good initial contact and establishing trust The wording and sequence of

the questions were found to be acceptable to the respondents In general, the CIS questions were found to be culturally relevant to the Chinese, though some modification had to be made on the operational definition of certain items For instance, a woman who scolds her children could not be judged as exhibiting morbid 'irritability' unless this is more prominent than is usual in Chinese culture, where such behaviour is more commonly demonstrated than in Western countries

The CIS revealed a one-week prevalence rate of 26%, a figure similar to that found in Tarnopolsky *et al*'s (1978) London survey These two studies were carried out with the same research strategy, instruments and case-definition Although the sample size of the present survey is somewhat small (so that the standard error of the prevalence was $26 \pm 7\%$), the figures suggest that the prevalence of minor psychiatric disorders is similar in modern urban cities of Great Britian and Taiwan This might further imply that neither ethnic nor cultural factors affect the occurrence of minor psychiatric disorders The two previous community studies carried out by Lin *et al* revealed a much lower prevalence of minor psychiatric disorders (1 2/1000 in 1946–8 and 7 8/1000 in 1961–3), and the authors attributed the increase between these two studies to modernization However, these workers used a brief family interview in their household survey, and only suspected cases were examined by a detailed psychiatric interview Such a method, although possibly adequate for identifying psychotic patients, has been proved to be inadequate for identifying minor mental disorders The suggestion that the higher rates reported in the present study are attributable to a modernization of urban environment remains to be investigated This can only be achieved in the developing countries, where many traditional rural communities still exist and both cross-sectional and longitudinal research designs can be applied In the main study of the present project the sample size has been increased to about 1000, and urban and suburban, as well as rural, communities will be included In the process the standard error of the prevalence will be decreased to about 2–3%, satisfactory enough for comparative study The main study is now in progress, and the findings will be reported in due course

The higher morbidity of minor psychiatric disorders among women reported in most Western surveys was also evident in this survey However, the explanation proposed by some workers concerning sociocultural factors, such as employment status, the care of young children, and the marital relationship (e g Tennant *et al* 1982, Briscoe, 1982), must be re-examined across cultures This will be reported in a separate paper (Cheng, 1985*c*) The present study confirmed the vulnerability of females to exhibit minor mental disorders, but not the reporting of more emotional disturbances which have been described by many workers Again, while some investigators (e g Goldberg *et al* 1976, Tarnopolsky *et al* 1979) have reported a higher false negative rate among the female respondents, this finding did not emerge from the present study The 'expressiveness' of women concerning their mental discomforts in Western cultures (Briscoe, 1978) was not apparent in this study, in which 75% of the false negatives were females The tendency for women to report more mental distress is also less evident in Chinese culture, since there is no difference between the mean CHQ scores of both sexes, or between their validity coefficients

One possible explanation for these findings is that the traditional value system and a female role which calls for the inhibition of emotional difficulties and personal dissatisfaction are still influential in present-day Taiwan society Emotional distress was more frequently expressed in somatic terms, as suggested by the higher validity of the CHQ and the high percentage of cases with morbid ratings of 'somatic symptoms' on the CIS (66 6% in male and 56 7% in female cases) There were also significantly more female respondents with somatic symptoms (17 9% in males and 30 9% in females) These figures lend support to the suggested explanation, since the females gave more positive scores only on items related to somatic symptoms, not on those expressing emotional distress

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The design and development of a screening questionnaire (CHQ) for use in community studies of mental disorders in Taiwan

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SYNOPSIS The problems which arise in the use of a psychiatric screening instrument in a language and culture other than that in which it was designed and developed are considered An account is given of the development of a psychiatric screening questionnaire suitable for use in Chinese community samples The questionnaire was derived from a Chinese translation of the General Health Questionnaire, with the addition of specially designed, culturally-relevant items Discriminant function analysis was then used to select a subset of 12 items which discriminated well between 'cases' and 'normals' in the community

INTRODUCTION

The two-stage screening strategy is now a well established method of psychiatric epidemiological enquiry In this method, a screening questionnaire is applied to a large sample of respondents, subsamples of whom, selected according to their questionnaire responses, are interviewed in the second stage by a psychiatrist using one or other standardized method of assessment

A variety of screening questionnaires have been designed for use in such two-stage surveys, of which the most well-known and most widely used is the General Health Questionnaire (Goldberg, 1972, 1978) It has been translated into a number of languages – including Italian (Fontanesi *et al* 1985), Portuguese (Mari & Williams, 1984, 1985), Spanish (Muñoz *et al* 1978, Medina-Mora *et al* 1983), Chinese (Chan & Chan, 1983, Chan, 1985, Cheng, 1985) and Bengali (B Sen, personal communication) – and used in the corresponding cultures

The use of a psychiatric screening instrument in a language and culture other than that in which it was designed and developed may give rise to considerable problems, including problems related to the culture-specific occurrence or expression of symptoms as well as those due to language Some workers find it possible to resolve the difficulties (e g Swartz *et al* 1985), while others regard them as being virtually insuperable and prefer to construct new culture-specific instruments (e g Carstairs, 1975, Verma & Wig, 1977)

In theory, a screening instrument should be developed in the cultural setting in which it is to be used However, it would in practice be foolish to ignore a large body of developmental work conducted in a different cultural setting some phenomena at least will be common to many cultures A reasonable compromise appears to be to use a previously well-developed instrument, albeit from a different cultural setting, in conjunction with additional, specifically designed and culturally relevant items The resultant 'hybrid' can then be regarded as constituting an initial item pool requiring further refinement and validation

Cheng (1985) translated the 30-item version of the GHQ into Chinese and constructed an additional 30 items thought to be relevant to the identification of minor psychiatric morbidity in a Chinese community The resulting 60-item 'Chinese Health Questionnaire' (CHQ-60) was then tested in a two-stage screening survey of a representative community sample ($N = 150$) in Kaohsiung, Taiwan The 30-item GHQ (in translation) and the 60-item CHQ were assessed, using a Chinese version of the Clinical Interview Schedule (CIS) (Goldberg *et al* 1970), the results are summarized in Table 1 It can be seen that,

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Table 1 *Validity coefficients of the Chinese version of the GHQ and CHQ**

	CIS			CIS	
	Case	Non-case		Case	Non-case
GHQ (+)	28	7	CHQ (+)	34	10
GHQ (−)	10	101	CHQ (−)	4	98
Total	38	108	Total	38	108

GHQ cut-off point	= 4/5	CHQ cut-off point	= 9/10
Sensitivity	= 73 7%	Sensitivity	= 89 5%
Specificity	= 93 5%	Specificity	= 90 7%
Overall misclassification rate	= 11 6%	Overall misclassification rate	= 9 6%
Positive predictive value	= 80 0%	Positive predictive value	= 77 3%

* From Cheng (1985)

while the validity of the GHQ was satisfactory, the sensitivity was improved by the addition of the 30 culturally-relevant items

In this paper, we present analyses aimed at developing a refined version of the Chinese Health Questionnaire

METHOD

The design of the CHQ

The 30-item GHQ was subjected to two-stage translation and all items were included The design of the new 30 items took into account the 'illness' concept of the Chinese, their language and method of expression of emotional discomforts The philosophical concept of 'optimal health' in Chinese is a state of 'balance' – between man and environment, between man and other people, as well as between all parts of man's internal organs Hence, the Chinese concern about the heat and coldness of their food, and about the relationship between them and their families and friends When they feel that these 'balances' are threatened and/or broken, emotional distress will then begin to emerge Somatization and somatic concern were thus reported to be the characteristics of neurotic disorders among the Chinese (Tseng, 1975, Kleinman, 1975, 1982, Lin, 1982) and were often the determinants of their helpseeking behaviour (Lin *et al* 1982, Kleinman & Gale, 1983) Half the new items related to these aspects They included questions concerning various somatic disorders, such as headache, giddiness, palpitation, aches and pains in the body and limbs, trouble with breathing, poor concentration and memory, cold sweating, precordial discomfort, gastrointestinal discomforts, shaking and/or numbness of limbs, fatigue, and having high *huo-chi* (internal fire) Other questions related to concern about the well-being of their families, and their relationships with them and close friends The original GHQ-30 and these new 30 items together constituted the experimental CHQ-60

The criterion of 'caseness'

The problems and methods of case-definition in community surveys of mental disorder have long been a subject of debate, although an emphasis on minor psychiatric morbidity is relatively recent (Shepherd, 1977, Williams *et al* 1980, Cheng, 1982) The Clinical Interview Schedule (CIS) (Goldberg *et al* 1970) was used in the present survey for two reasons First, the CIS and the GHQ were designed by the same research team, with the same concept of 'caseness' and for the same purpose (community surveys) Secondly, the interviewer (T-A C) had conducted a reliability study with this instrument on a community sample in London In this study, there was 100% agreement between a Chinese and two British psychiatrists on 'case'/'non-case' judgement, and the kappa coefficient for each symptom of the CIS was $\geqslant 0\,7$ (Cheng *et al* 1983) Furthermore, a reliability study of the Chinese translation of the CIS, conducted in Taiwan, also demonstrated high levels of reliability (Chung & Cheng, 1985) In the present study, those respondents with an Overall Severity Rating (OSR) of 2 or above on the CIS were regarded as 'cases', and an ICD diagnosis was made for each 'case'

The respondents

Two groups of respondents were used in the analyses the 150 community respondents investigated by Cheng (1985), and a patient group consisting of 138 consecutive new attenders at a community mental health centre at Kaohsiung For most of the analyses, the community respondents were divided into two subgroups, the community 'cases' ($N = 38$) and the community 'normals' ($N = 112$)

Analyses

There are different types of discriminant function analysis suitable for binary data (Hand, 1983*a*) The present study used the classical linear method Two different ways of data grouping were tried separately First, an attempt was made to find two discriminant functions which separated *three* groups (community 'cases', community 'normals' and patients), then, an attempt was made to find a single discriminant function to separate the two community groups (community 'cases' and community 'normals') In each case, a stepwise variable selection method was used with prior probability equal to group size

RESULTS

The age and sex distributions of the community sample and the patient group are shown in Table 2 There were no significant differences between the distributions of the two groups Table 3 gives the diagnostic distribution of community 'cases' and the patients in general, the clinical status of the patients was more severe than that of the community 'cases'

Discriminant analysis between the three groups

This analysis was performed on a total of 288 respondents, using the 60 items of CHQ as independent variables Table 4 shows the unstandardized and rotated standardized coefficients for the 9 items which contributed significantly to the discriminant functions Of these items, 4 were derived from the GHQ-30 and 5 were newly designed Fig 1 shows the scatterplot of respondents, according to their scores on the two functions and their group membership It is

Table 2 *Age and sex distribution of the community sample and patient group*

	Community sample ($N = 150$)		Patients ($N = 138$)	
Age group	Male	Female	Male	Female
15–34	41	43	41	34
35–54	30	20	20	19
55+	9	7	13	11
Total	80	70	74	64

For age difference male, $\chi^2 = 4\ 62$, df = 2, NS, female, $\chi^2 = 1\ 34$, df = 2, NS
For sex difference $\chi^2 = 0\ 002$, df = 1, NS

Table 3 *Diagnostic distribution of 'case' and patient groups*

	Patients		Cases	
ICD 9 categories	M	F	M	F
Schizophrenia (295 1, 295 3, 295 4, 295 5, 295 7)	14	4	—	—
Affective psychosis (296 1)	7	15	—	—
Affective psychosis (296 2)	0	2	—	—
Paranoid states (297 0)	0	1	—	—
Alcoholic psychosis (291 0)	1	0	—	—
Mental subnormality with anxiety states (317+300 0)	1	0	—	—
Anxiety states (300 0)	27	8	7	5
Neurotic depression (300 4)	16	32	5	16
Phobic obsessive, and hypochondriacal neurosis (300 2, 300 3, 300 7)	5	2	2	0
Adjustmental reaction (309 0 309 1, 309 2)	3	0	1	2
Total	74	64	15	23

Table 4 *Discriminant function coefficients of the three groups*

CHQ items	Unstandardized Func 1	Unstandardized Func 2	Rotated standardized Func 1	Rotated standardized Func 2
04*	0 56053	0 58278	0 24285	0 02525
18	0 71279	−0 13105	0 29764	−0 05472
20*	0 24271	0 89963	0 09433	0 34964
22	0 27875	0 99611	0 10734	0 38358
23*	0 00995	1 16215	0 00386	0 45067
27*	0 73370	−0 75647	0 30602	−0 31551
35	0 98434	−1 16252	0 39532	−0 46688
44	−0 47492	1 61250	−0 18087	0 61410
49*	0 91380	−0 75580	0 34927	−0 28888
(Constant)	−1 72612	−0 42851		

Function	Eigenvalue	Canonical correlation	Wilks lambda	χ^2	df	
1	1 50892	0 77551	0 35496	291 04	18	($P < 0$ 0001)
2	0 12287	0 33079	0 89058	32 564	8	($P < 0$ 0001)

Have you recently
CHQ 04* Been having a good memory?
CHQ 18 Lost much sleep over worry?
CHQ 20* Been feeling that your working efficiency is as good as before?
CHQ 22 Found that your nerves are too bad to do anything?
CHQ 23* Been able to talk to people at social gatherings without feeling tense?
CHQ 27* Been feeling uneasy or irritable over trivialities?
CHQ 35 Felt constantly under strain?
CHQ 44 Been able to enjoy your normal day to day activities?
CHQ 49* Been worried about your family or close friends?

* Newly designed items

obvious that there was no clear discrimination between the three groups indeed, when the three groups were categorized according to the discriminant function scores, it was found that of the 38 community 'cases' 10 were classified as 'normal' and 19 as patients (see Table 5)

Discriminant analysis between community 'normals' and community 'cases'

This analysis was performed on the 150 community respondents In order to maintain a satisfactory ratio between the number of variables and respondents, the discriminant analysis was performed in two steps First, the original 30 GHQ items and the new 30 CHQ items from the 150 community respondents were treated with discriminant analysis separately A maximum step of 15 was fixed for these two analyses, and each of them yielded 15 items with discriminating power These two sets of 15 items were then put together and a further discriminant analysis was applied to the data with these new 30 items Table 6 shows the unstandardized and rotated standardized canonical discriminant function coefficients of the 12 items which contributed significantly to the discrimination Fig 2 shows the distribution of respondents, according to their scores on the function, it is obvious that the two groups have been separated very well by these 12 items The community 'normals' were all correctly classified, as were 35 (92%) of the community 'cases'

DISCUSSION

Screening questionnaires have been widely applied as case-finding instruments in community surveys of mental disorders however, the methods of development have not always been very satisfactory The present study used a representative sample of adequate size from a Chinese community, and the design of the questionnaire took into consideration the socio-cultural characteristics of the Chinese and their ways of expressing psychological difficulties

Comparison of the two discriminant analyses

When discriminant analysis was applied to the three groups (community 'cases', community 'normals' and patients), it failed to produce two

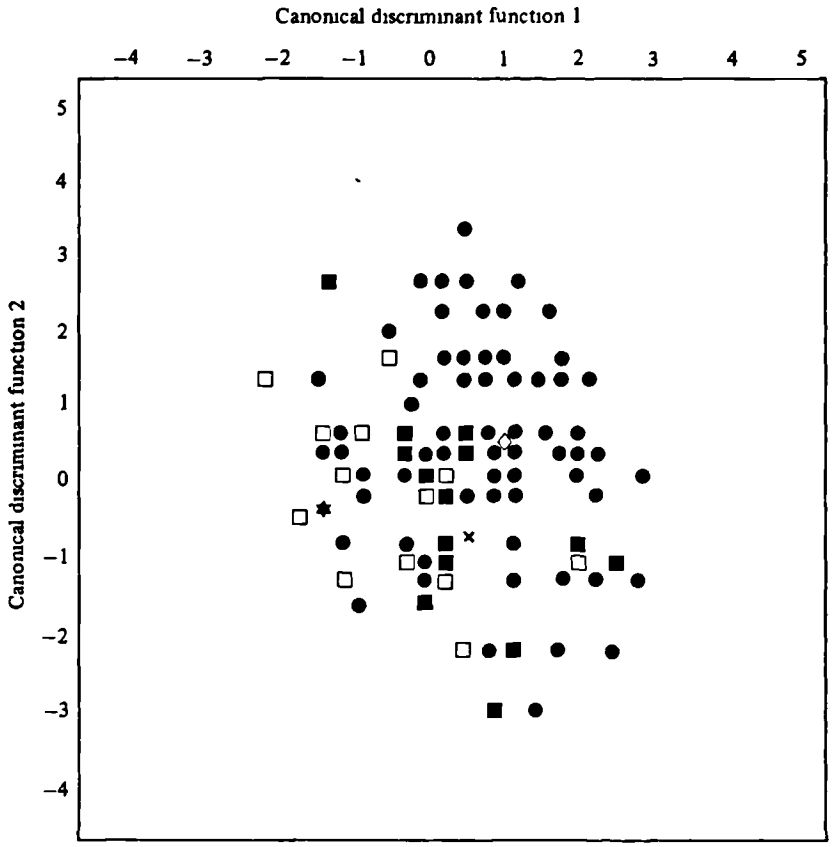

FIG 1 Scatterplot of canonical discriminant function between the three groups Each symbol represents a group of respondents with the same scores on the two functions □, Non-case ■, case, ●, patient, ✱, non-case group centroid, ×, case group centroid ◇ patient group centroid

Table 5 *Classification of three groups according to discriminant functions of CHQ 9 items*

Actual group (CIS diagnosis)	No (%)	Predicted group membership		
		1	2	3
1 ('normal')	112	105	4	3
	(100)	(93 8)	(3 6)	(2 7)
2 (case')	38	10	9	19
	(100)	(26 3)	(23 7)	(50 0)
3 (patient)	138	22	7	109
	(100)	(15 9)	(5 1)	(79 0)

Group members correctly classified = 77 43% (233 out of 278)

satisfactory discriminant functions to separate these three groups One possible explanation for this failure is that the willingness of the community respondents to express emotional difficulties is different from that of the patients It may be that the mental health centre attenders were more willing to give positive answers to the questionnaire, and also more able to comprehend the notion of psychological symptoms In addition, the psychological symptoms of the

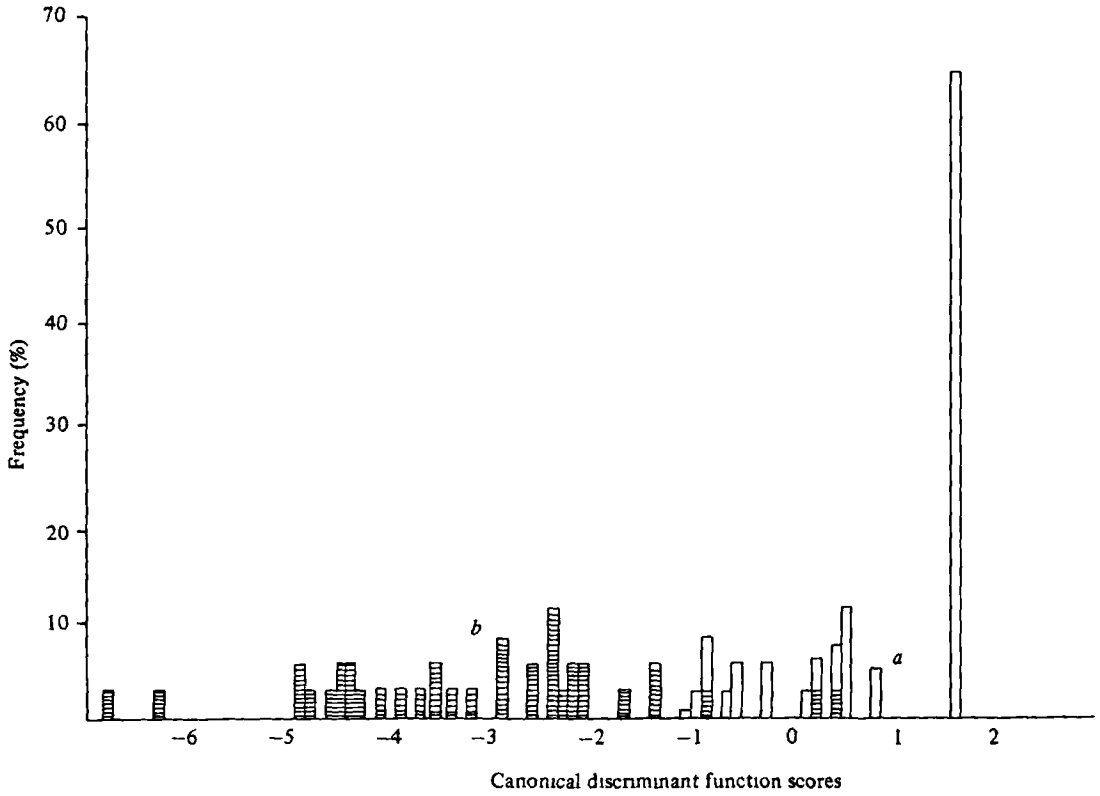

FIG 2 Canonical discriminant function between community 'case / normal groups □, Community 'normal , ■ community case , *a* normal group centroid (1 07556) *b* 'case group centroid (−3 17007)

patients were more severe than those of the community respondents

Thus, the much higher positive scores of the patient group may have minimized any differences between the community 'normal' and 'case' groups These differences became evident when the two community groups only were analysed Since the design and development of the CHQ is mainly for use in community surveys, the latter analysis is most relevant

The 12-item Chinese Health Questionnaire (CHQ-12)

The 12 items selected in the second discriminant analysis (which are listed in Table 6) can be regarded as constituting a 12-item Chinese Health Questionnaire (CHQ-12), which requires further evaluation

Analysis of the CHQ-12 items

An examination of the 12 items revealed that 6 came from the GHQ-30 and 6 were newly designed Five of the former were questions about anxiety and depression, and the other concerned sleep disturbance (which is included in almost all psychiatric screening questionnaires, since it is a universal phenomenon indicating emotional distress)

The remaining 6 items can be grouped into two categories – 'somatic symptoms and somatic concern' and 'interpersonal difficulties' – a finding which reflects and emphasizes the relevance of the considerations informing the design of the new items Although factor analysis of the CHQ-12 has not yet been carried out, the four main categories are very similar to the four factors derived from the GHQ-60 by principal components analysis and which constitute the 28-item version of the GHQ (Goldberg & Hillier,

Table 6 *Discriminant function coefficients of the two groups*

CHQ items	Unstandardized	Standardized
03*	−1 116430	−0 41233
05*	−0 796022	−0 25876
09*	−1 113334	−0 36406
12*	−1 396454	−0 38738
18	−1 187359	−0 40032
24*	3 752514	0 52399
40*	−1 473355	−0 47020
41	−1 701374	−0 43855
42	−1 214429	−0 29194
43	−1 358936	−0 42168
55	2 092828	0 44534
60	−3 049904	−0 70088
(Constant)	1 583837	

Eigenvalue = 3 45567, canonical correlation = 0 88066, Wilks' lambda = 0 224433, χ^2 = 212 17, df = 12, $P < 0$ 0001

Have you recently
CHQ 03* Been suffering from headache or pressure in your head?
CHQ 05* Had palpitation and worried that you might have heart trouble?
CHQ 09* Had discomfort or a feeling of pressure in your chest?
CHQ 12* Been suffering from shaking or numbness of your limbs?
CHQ 18 Lost much sleep over worry?
CHQ 43 Been taking things hard?
CHQ 24* Been getting along well with your family or friends?
CHQ 41 Been losing confidence in yourself?
CHQ 42 Been feeling nervous and strung-up all the time?
CHQ 60 Been feeling hopeful about your future?
CHQ 40* Been worried about your family or close friends?
CHQ 55 Felt that life is entirely hopeless?
* Newly designed items

1979) This similarity may explain the acceptable validity of the GHQ-30 found in the pilot study, while the psycholinguistic problems and socio-cultural preferences in the expression of distress might account for the better sensitivity of the CHQ-60 and the inclusion of 6 of the new items in the CHQ-12

In our own fieldwork, some of the translated GHQ items (e g 'Have you recently been managing as well as most people would in your place?') were found to be difficult for the Chinese respondents to understand This raises an important issue in cross-cultural psychiatric research it is necessary that the equivalent *meaning* should be expressed in the different language, rather than that the exact words of the original language should be translated

Further assessment of the CHQ-12

The discriminant function coefficients and the (extremely good) classificatory power of the CHQ-12 can be taken to apply to the community in Kaohsiung City on which the instrument was developed, so that it can appropriately be applied as a screening instrument there However, the same classification function will not necessarily be found in samples from different communities (Hand, 1983*b*) Thus, the stability of the coefficients needs to be tested in various Chinese communities in Taiwan and other parts of the world If they prove to be stable among a wide range of Chinese communities, then the instrument can be used both as a screening instrument and as an indicator of morbidity for comparative studies

Assessment of the CHQ-12 is currently being undertaken by one of the authors (T -A C) in an epidemiological study of mental disorders among rural, suburban and urban communities in Taiwan, and the results will be reported in due course

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